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August 26, 2013

Jon Tapping, P.E.
Risk Manager
California High-Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814

RE: Construction Risk-Financing for High-Speed Rail

Dear Mr. Tapping:

Pursuant to our scope of work for risk management assessment services, we are pleased to present the following report to the California High-Speed Rail Authority (CHSRA) for your review.

We have interviewed members of your staff, participated in multiple meetings with CHSRA and its partners, reviewed numerous documents from the CHSRA's website, and those provided by CHSRA staff and the Program Management Team. We understand this is a complex project that requires careful evaluation of all relevant issues and meticulous validation of findings and conclusions. Thus, we have developed recommendations we believe will provide the optimum risk-financing program for construction of California's High-Speed Rail System and will bring value to your organization.

Thank you for this opportunity to work with you and the CHSRA. We value our relationship and look forward to future opportunities to work with you for any additional risk management consulting needs.

Regards

A handwritten signature in blue ink that reads "Catherine Wells".

Catherine Wells, CPCU, ARM, CRIS, MBA
Director, Risk Consulting Solutions

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I. Executive Summary

A. Background

The California High-Speed Rail Project is a unique public works undertaking. It is also one of the largest infrastructure projects in U.S. history. There are many components to the project including major capital equipment procurement, construction of underlying civil infrastructure, construction of rail infrastructure, and high-risk activities such as tunneling. It is a challenging engineering and construction project with many risks.

Over the course of the project, the California High Speed Rail Authority (CHSRA), the project “owner,” will be required to cooperate and partner with numerous entities, both public and private. Some of the interactions will involve local municipalities, other transit systems, state and county agencies, private businesses, residents, and the commercial freight railroads. Each of these entities will have separate contractual requirements for the interaction, including indemnity and insurance requirements, and some of the entities will be involved in the project directly, even performing some of the construction related to completion of the rail system.

Carefully structured risk financing is crucial for the project and is complicated by many factors including:

- The large number of interactions with other agencies and the obligations incurred contractually;
- The complexity of the project;
- The high public profile of the project;
- Interactions with freight railroads and other transit systems;
- The wide variety of construction project delivery systems and financing methods;
- The widespread geographical area covered by the project; and
- Unique work issues in some of the areas in which projects component parts will be constructed.

Because of the many parties at interest in the high-speed rail project and the potentially significant exposures, some form of insurance will be the predominant risk-financing tool, along with contractual risk transfer, also backed by insurance. This report specifically addresses risk financing for CP 2-4, but the findings and conclusions presented in this report have major implications for other construction packages and contracts, both past and future.

B. Major Findings

1. Risk Analysis

The High-Speed Rail Construction Project involves all of the typical exposures of civil infrastructure transportation projects. Many of these are listed in Chapter II Risk Analysis, along with definitions and listing of hazards and perils.

As most of the exposures are common to construction, many insurance products exist that already address the majority of the exposures. The “usual” exposures do not, of themselves, significantly affect the risk-financing decisions for a project. However, on this project there are also unusual exposures or at least significant exposures that *do* affect the risk-financing decision. Some of these decision-impacting exposures or conditions are as follows.

Contractual Obligations. To build a huge new transportation across much of the length of California, through multiple jurisdictions and to connect it with existing transportation infrastructure, the CHSRA must enter multiple agreements. Each of the agreements have requirements for indemnity and insurance, generally favoring the other party whose property must be crossed or whose jurisdiction must be impacted by construction and operation of the system. Meeting the insurance obligations specified, and funding for potential liability flowing from the indemnity obligations is a risk itself.

Valley Fever. The Central San Joaquin Valley is one of the worst locations for Valley Fever contagion. Valley Fever is a fungal infection that can cause serious illness and potential long-term health implications. Construction activity exacerbates the exposure. There is no current vaccine and the long-term health effects are not well understood, but some have been documented. Long-term health liabilities can indefinitely delay of settlement project-oriented insurance programs, such as consolidated workers’ compensation programs. Other long-term health threats, such as asbestosis, have led to mass tort actions (“class actions”).

Remote Work Locations. The Initial Operating Section (IOS) is being constructed in the Central Valley and is remote from major urban centers. Much of the work force will need to commute or will need to be housed near the project site. Either situation increases the workers’ compensation exposure dramatically. Long commutes may create significantly greater exposure and hazard. Auto accidents are among the most serious risks in terms of both frequency and severity. Worksite housing may create a so-called “24-hour” coverage exposure. Both of these factors can result in elevated workers’ compensation costs.

Employment Goals. The CHSRA has established a Community Benefits Agreement (CBA) for the construction program. This agreement attempts to facilitate careers in the construction industry, and promote employment opportunities for certain classes of workers. The workers likely to benefit from this program will have little or no construction experience and will require extra safety effort.

Heat. For much of the year, the Central Valley is hot. Heat injuries are well documented and potentially severe, increasing the workers' compensation exposure.

Commercial Railroad Alignment. CHSRA is required to use "existing transportation or utility corridors to the extent feasible."¹ Much of the alignment will be near commercial freight railroad right of way. Moving freight trains in the vicinity of construction creates exposure. In addition, the freight railroads are in a position to demand severe indemnification and insurance requirements in their agreements with CHSRA.

Delay Risk. Risk of the cost of delay caused by natural perils can be insured under property policies, including builder's risk. Contractor caused or contractor contractually assumed delay can be addressed by liquidated damages. Many other forms of delay cannot be transferred or insured. Given the high political profile of the High-Speed Rail Project and strong opposition by some parties, uninsurable delay is a significant risk.

Brand Risk. In the private sector, brand or "reputational" risk is considered one of the two greatest risks facing corporations (the other is intellectual property or copyright). For a high-profile infrastructure that is the first of its kind in the U.S., reputational risk is significant.

Mixed Financing and Delivery Systems. CHSRA is committed to the use of Public-Private Partnerships (P3) to obtain private capital and know how to assist in building parts of the High-Speed Rail system. P3 risk-financing is generally incompatible with certain types of consolidated insurance programs, such as owner controlled and contractor controlled approaches. We discuss these risk-financing concepts in the next section.

2. Risk-Financing Alternatives

The report examines the predominant risk-financing approaches available for large infrastructure construction projects. These are explained below.

Traditional. Traditional risk-financing on a construction project involves each participant bringing its own risk-financing program ("practice policies"), which can be any combination of self-insurance, risk retention, commercial insurance, or alternative risk transfer (e.g., captive insurer). These can also be any combination of policy limits, coverages, exclusions, limitations or other factors.

The best features of traditional risk-financing on a construction project are that the coverage is already in place and the cost, already built into the contractor/subcontractor's pricing, does not need to be removed.

The worst features of traditional risk-financing are inconsistent coverage among the many participants, a fairly high risk of inadequate limits or no coverage, significant difficulty in

¹ Streets and Highways Code section 2704.09.

monitoring compliance with contractual insurance requirements, and a high frequency of cross-litigation, which is costly and disruptive to the project.

Consolidated (or “controlled”) Insurance Programs (CIP). In a CIP, one entity arranges coverage for all construction activity and participants in the project. The project is underwritten as a *project* rather than individual underwriting of each entity as a *business*. CIPs may be “sponsored” by any entity with an overarching interest in the project, including the owner, a general contractor, a developer, or a construction manager. Commonly, however, CIPs in public works are arranged either by the contractor (“contractor controlled insurance program”) or the owner (“owner controlled insurance program”).

The best features of CIPs are uniformity of broad coverage, high limits project length coverage, generally better safety, reduction of cross suits, and a potential for savings.

The worst features of CIPs are administrative burden, disruption of contractor practice insurance programs, and a potential for disputes over insurance credits. Contractors are required to credit back the amount they would have charged for insurance plus markup.

Public-Private Partnership. Public-private partnership is not a construction risk-financing alternative. Nevertheless, use of a P3 has major implications for construction risk-financing that must be taken into account in a risk-financing alternative study for a program that may involve P3.

In a P3, “insurable risks are transferred from the public sector to the private sector.”² “Although the project participants may each provide insurance for the project, it is generally more efficient for the project company to provide or ensure provision of comprehensive insurance coverage for the entire project.”³

As a result many, if not most, P3s are insured under a form of a CIP sponsored by the concessionaire, which is tied into the insurance program for the operations and maintenance phase of the P3. Often, insurers underwrite the entire duration of the P3 agreement in a combined construction/operations and maintenance program.

3. Cost/Benefit Analysis

This report includes cost/benefit analysis of traditional and CIP (specifically an OCIP) options for CP 2-3 and CP-4. We did not separately analyze cost/benefit of a CCIP as any financial benefit from a CCIP accrues to the contractor, not the owner. Otherwise, costs should be about the same except that when projects are broken into packages, some economies of scale are lost if the owner is not the CIP sponsor.

² Lei Zhu and David K.H. Chung, *Game Theory-based Model for Insurance Pricing in Public-Private-Partnership Project*, p. 168

³ The World Bank, PPP in Infrastructure Resource Center, “Risk Mitigation Mechanisms.” Online at <http://ppp.worldbank.org/public-private-partnership/financing/risk-mitigation-mechanisms-products>

Furthermore, bid specifications for contracts generally should not mandate CCIPs as to do so could significantly increase costs to the owner. Thus, the cost of a CCIP and the cost of a traditionally insured program are considered to be equivalent from the owner's perspective for purposes of our cost/benefit analysis.

The analysis shows that, at various loss levels and under different cost assumptions, CHSRA likely would obtain a cost benefit through use of an OCIP for CP 2-3 and CP-4 combined. In the best-case scenario, hypothetical financial benefits could reach over \$16 million. In the worst-case scenario, an OCIP would cost CHSRA approximately \$500,000 more than the alternatives.

As noted in the report, the cost/benefit analysis is based on certain assumptions and limited data (because of confidentiality and competition concerns of parties that would have such data) and actual financial results could vary significantly from the models.

C. Conclusions and Recommendations

For reasons explained later in this section, an OCIP is not the preferred risk-financing mechanism for the remaining projects in the IOS. However, CHSRA should arrange and control the *liability* insurance for the various construction packages. The principal reasons for control of liability insurance are as follows.

- The indemnity obligations CHSRA has acquired are principally CHSRA's obligations. Although a "flow-down" provision in Construction Package contracts attempts to pass the risk through to the design-build contractors, the indemnitees will look to CHSRA for defense and indemnity. Contractual transfer of risk tends to break down when large losses occur.
- Indemnity obligations often are broader than liability insurance coverage. It is important to get the broadest coverage. The only way to be sure of the broadest coverage is to control the purchase.
- Economy-of-scale opportunities are lost by not purchasing a consolidated liability insurance program for the entire project. Consolidating this coverage allows purchase of higher limits than each contractor could or would provide, likely for less cost than the total of the contractor-purchased policies.
- If CHSRA has to replace a design-build contractor and the contractor has initiated a CCIP, maintaining or replacing the liability insurance program could be difficult.
- The existence of different liability risk-financing programs on different construction packages working at or near the same locations complicates the risk financing and could lead to claim conflicts and cross litigation.

- Protection of either CHSRA or an indemnitee as an additional insured is precarious given the changes to insurance forms and the California anti-indemnity statutes, as explained in the report. If CHSRA controls the insurance it can determine the level of protection for CHSRA, both as an indemnitee and as an indemnitor, to a much higher degree.
- If each of the construction packages are awarded to different bidders and each design-build contractor is required to arrange \$200 million liability limits, which is the likely requirement imposed by some of the agreements CHSRA is entering, market capacity may be strained and pricing may go up.

Other than liability, the analysis does not support owner-arranged insurance coverage for the various construction packages. The design-build contractors can provide the remaining coverages for CP 1–5, or a concessionaire can provide coverage for future P3 projects. Those coverages include:

- Builder's risk for property under construction;
- Workers' compensation;
- Professional liability;
- Contractor's pollution liability;
- Auto liability;
- Railroad protective liability as required by the railroads; and
- Any other insurance specific to the construction package (e.g., aircraft insurance for aerial mapping activities);

The reasons for not consolidating the remaining insurance coverages into an owner-controlled program are as follows.

- In an already complex project, CHSRA does not need the added complexity of managing a complicated insurance program. Such a program could require substantial additional staffing and finding qualified persons available on a project basis for such work could be challenging. CHSRA could contract some of the needed services, but the cost of such services could be substantial.
- Other than general liability insurance and builder's risk insurance, the remaining coverages protect the contractor, the contractor's property, or the contractor's employees more than they protect CHSRA. It is appropriate for the contractor to control the risk financing for such risks in a program like the High-Speed Rail Project. In a less complex, less spread-out program, consolidation might make more sense.
- Other than general liability insurance, consolidation of insurance coverage for this particular project probably would not achieve significant economies of scale or

discounts. Workers' compensation costs are dependent on payroll and classification codes. While there is some possibility of savings through keeping workers' compensation losses at a minimum, there is a significant possibility of high losses due to some of the exposures identified in the risk analysis (Valley Fever, location, heat, employment goals).

D. Plan of Action

To implement a general liability only owner controlled program, CHSRA will need to select an insurance broker experienced in construction, preferably with an emphasis in public works infrastructure. The insurance broker can solicit quotes from the various insurance markets.

CHSRA contractual obligations will require liability insurance coverage with limits of at least \$200 million. CHSRA should request quotations at \$300 and \$400 million to determine incremental cost of increases. Since consolidation of the liability insurance should produce economies of scale, and put less strain on market capacity, CHSRA may be able to acquire higher limits for less than the ultimate cost of \$200 million limits for each construction package.

Since CP-1 has already been awarded under a traditional model, but the design build contractor arranged a CCIP, there may be an opportunity for CHSRA to provide the general liability insurance for CP-1 and obtain a recovery for some or all of the cost from the insurers. Coverage has been bound as of this report date, but it is our understanding that premiums may not have been paid. If that is correct, it may be easier to negotiate a credit and replace the contractor's general and excess liability with a consolidated program.

II. Introduction

A. Report Content

This report describes the background, risks, decision factors, alternatives, cost/benefit, and preferred approaches to financing construction risks during the High-Speed Rail Project. The report is divided into the following chapters and topics.

Chapter/Title	Topics
I.	Executive Summary
II. Introduction	Presents the report scope and purpose, and identifies statutory, regulatory issues, and caveats about the report.
III. Risk Analysis	Identifies major exposures, hazards, and perils associated with Construction Phases 1 – 4, evaluates their impact, and discusses appropriate risk-financing alternatives.
IV. Risk-Financing Alternatives	Provides a discussion of the major risk-financing alternatives for exposures arising out of construction specific to the project.
V. Cost/Benefit Analysis	Presents pro forma and discussion analysis comparing the major risk-financing options.
VI. Findings, Conclusions, and Recommendations	Discusses findings and conclusions based on the information presented in the earlier chapters and presents recommendations for the structuring of a risk-financing program for High-Speed Rail.

B. Study Scope

The scope of this study is confined to evaluating risk-financing alternatives for property and casualty exposures for construction of California High-Speed Rail. The study is specifically focused on the construction projects (CP) CP-2 through CP-4, although there is some necessary consideration of project CP-1, CP-5, and future projects.

Risk-financing alternatives evaluated are restricted to commercial property and casualty insurance, although some discussion of retaining the financial risk of uninsurable exposures is also necessary. The report also contains some extended discussion of non-insurance (i.e., contractual) risk transfer, recognizing that such contractual transfer of risk is still supported by some form of commercial insurance.

Although it is necessary to perform a high-level analysis of exposures, perils, and hazards in order to identify specific risk-financing needs, this report does not include a formal risk register.

It does provide lists of specific hazards and perils. Because commercial insurance is designed to cover a broad range of risks, it is not necessary to identify each and every hazard or to develop a separate strategy for each one. Such an analysis is appropriate for risk mitigation but unnecessary for a risk-financing analysis. We understand the System Safety Specialist for the Program Management Team (PMT) is developing a formal hazard risk register and mitigation plan.

C. Statutory and Regulatory Issues

Statutory and regulatory controls apply to:

- Construction of High-Speed Rail;
- Contractual risk transfer, especially for construction activity; and
- Use of certain risk-financing techniques for public works projects.

In evaluating risk-financing options for CHSRA, the following statutes were reviewed and analyzed:

- California Government Code Section 4420 et seq., which enables and specifies requirements for owner controlled insurance programs for public works;
- California Civil Code Section 2782 et seq. (“Construction Anti-Indemnity Statute), which governs and limits contractual transfer of risk in contracts related to construction;
- California Insurance Code Section 11580.04, which voids coverage for the active negligence of a public agency as an additional insured in a contract in connection with construction where the indemnity agreement would be invalid under subdivision (b) of Section 2782 of the Civil Code; and
- US Code Title 49 Section 28103 (Public Law 105-134 “The Amtrak Act”), which provides a statutory cap on the aggregate of all passenger “personal injury” claims.

This report presents analysis and recommendations developed with awareness of the restrictions, prohibitions, and requirements of these statutes.

D. Caveats

Proformas developed for this study are necessarily hypothetical and require exercise of judgment on the part of the analyst. Insurance, service rates, and assumptions used are based on review of data from other projects, discussions with industry representatives and experts, and a search of the available literature on project risk-financing.

Program costs, schedules, and scope information used in this report are based on information provided by CHSRA staff, by PMT staff, or obtained from public documents related to the High-Speed Rail Program.

This report does not attempt to forecast or account for changes or shifts in the markets for insurance coverage or construction services. Rates and assumptions are based on current market conditions, which likely will change over the course of the project.

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III. Risk Analysis

This chapter discusses the types of loss exposures, perils, and hazards facing CHSRA in the high-speed rail construction program. The analysis presented here is from the perspective of risk financing which can be provided through insurance, self-insurance, or contractually-transferred risk. Other analysts working on behalf of CHSRA have addressed cost and schedule risks separately.

This chapter discusses common methods for financing the types of risk identified and specific recommendations for a risk-financing program are provide later in the report.

A. Property

1. Property at Risk

During the course of construction of the high-speed rail system various types of property will be at risk of loss. This property will include both real and personal property that belongs to multiple parties, including the CHSRA, contractors, railroads, other agencies, possibly third parties working or residing near the project, and possibly employees or agents of all the above.

Types of property at risk for the various projects will likely include:

- Contractors equipment;
- Machinery;
- Worker tools;
- Other personal property of workers on site;
- Fuel and other supplies;
- Materials that will go into the construction;
- Temporary structures;
- Constructed portions of the project including bridges, rail lines and bed, and roadways;
- Vehicles;
- Aircraft;
- Watercraft;
- Cranes and heavy equipment;
- Property belonging to railroads;
- Other third party property;

- Trenches and tunnels;
- Mechanical and electrical installations;
- Bridges and other aerial structures;
- Trenches and tunnels;
- Landscaping;
- Temporary lighting;
- Electrical or electronic systems;
- Utilities; and
- Temporary and permanent drainage structures.

2. Perils

Perils are the direct causes of loss. Some of the perils that can cause physical property loss include (this is not a complete list):

- Fire;
- Lightning;
- Explosion;
- Implosion;
- Collapse;
- Electrical arcing;
- Caustics or other harmful substances;
- Vibration;
- Vehicle, aircraft, train, boat, or equipment collision;
- Impacts of various sorts (e.g. falling meteors, space debris, cranes, etc.);
- Smoke;
- Riot;
- Strike;
- Terrorism;
- Storm;
- Flood;

- Rising water;
- Inundation;
- Mold and bacterial damage;
- Windstorm;
- Hail;
- Volcanic eruption;
- Chemical reaction;
- Earthquake;
- Vandalism or malicious damage;
- Theft;
- Subsidence;
- Landslide;
- Earth movement;
- Bursting or overflowing of receptacles or tanks;
- Dust;
- Corrosion;
- Wear and tear; and
- Machinery breakdown.

Some of these perils, such as corrosion and wear and tear, are not considered insurable and must be treated with preventive or loss mitigating measures. Some form of property insurance can cover most of the other perils.

3. Hazards

A *hazard* is anything that causes or increases the likelihood of a loss. The PMT Technical Safety Specialist is working with members of CHSRA management and the PMT to develop a formal hazard risk register listing identified hazards, classifying them according to a modified military standard, and developing mitigation measures as appropriate.

The hazard risk register will necessarily be more formal and complete than a list of hazards developed for risk-financing analysis. The safety hazard risk register incorporates mitigation measures.

Hazard analysis for risk financing need not be as precise as hazard analysis for mitigation. Traditional risk-financing (insurance) anticipates and broadly applies to a variety of hazards, includes coverage under relatively broad categories, and does not specifically address mitigation. One of the principal objectives of a risk-financing analysis is to match up insurance coverage to identified risks in the most efficient manner.

The risk-financing analysis is conducted with the understanding that insurance underwriters consider hazards when deciding to underwrite a program or risk. Therefore, it is prudent to identify some of the major hazards of a project in a risk-financing study such as this one. Some of the identified property hazards characteristic of this program include:

- General construction activity on site;
- Construction traffic;
- Proximity to the public in certain areas;
- Proximity to streets and roads;
- Work around freight rail lines;
- Proximity to seismic faults;
- Proximity to waterways;
- Use of heavy equipment, cranes, etc.;
- Excavation work;
- Night work;
- Heat;
- Environmental disruption;
- High wind areas;
- Unforeseen or irregular soil or geological conditions; and
- Hostility toward the project from certain parties.

4. Treatment of Property Risks

Property risk management uses insurance as a primary risk-financing tool. Property insurance is efficient because of the long history and experience of insurers, the potential for catastrophic loss, and the enormous amount of loss data allows for accurate predicting of losses over a broad array of exposures. Projects typically do not go without property insurance of some kind.

There are various property interests in a construction project. Contractors and subcontractors own equipment, tools, and vehicles. They also have an interest in the materials and components going into the work, and in the work itself.

Owners have an interest in the real property at the site. Owners, like contractors, also have interest in the materials and components on site for inclusion into the work and in the completed work. The owner's interest is generally greater than the contractor's because the owner is the ultimate possessor of the property.

Generally, property in which multiple parties have an interest is insured under a single policy. Property in which only one party has an interest, such as a subcontractor's tools and equipment, are insured by the party with the interest, i.e., that subcontractor.

Insurance for property under construction is often called "builder's risk" or "course of construction" insurance. The owner, developer, or general contractor can arrange this coverage as long as the party has an insurable interest in the property.

There are reasons for a project owner to arrange this coverage and they include the following.

- Contractors add a "markup" to any part of the project, including insurance costs for coverages they arrange. There is no reason for an owner to pay this markup unless they do not have the resources to arrange the coverage directly.
- Contractors and their insurance brokers may have less incentive in obtaining the most competitive pricing than would the owner, unless the contract is guaranteed maximum price.
- Coverage, terms, and conditions vary significantly under builder's risk policies. By controlling the purchasing decision, the owner can ensure they have negotiated the broadest policy form with the desired coverages, limits, and conditions. This is important, as the owner has the most to lose.
- If the owner controls the builder's risk insurance there should be less chance of a gap in coverage, as the property transitions from course of construction insurance to permanent insurance.

Conversely, many large general contractors carry rolling builder's risk programs that have high limits per project and competitive rates. An advantage to an owner passing this coverage requirement on to the large general contractor is that the owner may also be able to pass along costs not covered under insurance policies such as deductibles, excluded risks, or other conditions. Another advantage is that the general contractor arranging coverage handles the administration, which can sometimes be burdensome.

If the general contractor's builder's risk program is chosen to insure the project, the owner or its professional insurance representative should thoroughly review the actual policy form to ensure it meets with the owner's approval.

The portions of the High-Speed Rail Project evaluated for risk financing in this study include three segments that could conceivably be insured as three separate programs. While each segment is large enough to be insured as a stand-alone program, a combined builder's risk program is also practical. Such an approach (a single program for all three projects) provides benefits of volume discount, consistency of coverage, ease of administration, and negotiating leverage.

B. Time Element and Economic Loss

1. Delay

Delay is a major economic threat to any construction project, but especially so to those projects intended to be revenue producing, as project financing is structured based on assumptions about future revenue streams. The High-Speed Rail Project is such a program. CHSRA has developed an ambitious schedule for completion of various segments of the program and commencement of revenue operations as shown below in Exhibit 2-6 from the Revised 2012 Business Plan.

Exhibit 2-6. Projected milestones for completing the environmental review process/potential construction completion

High-speed Rail Section	Release Draft EIR/EIS	Adopt Final EIR/EIS	Receive Record of Decision	Complete Construction
Merced–Fresno (ARRA)	August 2011	June 2012	June 2012	2021
Fresno–Bakersfield (ARRA)	May 2012	November 2012	December 2012	2017
San Francisco–San Jose	February 2014	October 2014	December 2014	2028
San Jose–Merced	February 2013	October 2013	December 2013	2026
Bakersfield–Palmdale	May 2013	December 2013	February 2014	2021
Palmdale–Los Angeles	February 2013	September 2013	October 2013	2028
Los Angeles–Anaheim	February 2014	September 2014	December 2014	TBD
Merced–Sacramento (Phase 2)	TBD	TBD	TBD	TBD
Los Angeles–San Diego (Phase 2)	TBD	TBD	TBD	TBD

CHSRA's Revised 2012 Business Plan projected revenue for the Initial Operating Section for three different ridership scenarios and anticipates positive net cash flow from the beginning, as shown in Exhibit ES-7 from the Plan.

Exhibit ES-7. Operating results for IOS, year 2025

Ridership Scenario	Ridership (millions)	Revenue (millions)	Operating and Maintenance Cost (millions)	Net Cash Flow from Operations (millions)	Operating Subsidy?
High	10.5	\$1,096	\$556	\$540	No
Medium	8.1	\$844	\$499	\$345	No
Low	5.8	\$591	\$376	\$215	No

Unlike other studies projecting revenues for rail transportation systems, notably the French TGV system, CHSRA's model attempts to avoid optimistic assumptions of particular events that could skew results. Therefore, the revenue projections shown above are considered conservative.

Nevertheless, a significant delay in completion could have multiple financial consequences. Not only could revenue projections be reduced by delay, but construction costs also rise as a result. A delay caused by damage to the work can result in additional expense for engineering and design, increased finance costs, additional insurance costs, additional legal fees, and other expense. Delays can also result in reputational damage, which is discussed below.

Losses caused by insured perils that can cause delay would be covered by builder's risk insurance. With the business income insurance recovery and with coverage for extra expense or expediting expense, CHSRA possibly could make up time and avoid a delay in opening. At worst, such a loss could result in uninsured costs and could delay revenue operations resulting in financial loss that could affect the CHSRA financial model.

Of course, causes of delay other than those caused by insurable perils are a possibility. For high profile projects like HSR, lawsuits are often a major cause of delay. Opponents to a project bring actions, frequently under environmental laws, to halt or alter the course of a project. Sometimes lawsuits can drag on for extended periods, slowing or halting project progress. Economic losses resulting from such actions are not generally insurable.

Delayed or disapproved funding from external sources and regulatory actions are other sources of potential delay or, in the extreme, project cancellation. These risks are common to major infrastructure projects. These risks and the legal risks are addressed in a separate risk register for schedule and budget, are treated with mitigation measures (as opposed to financing measures), and are not part of this analysis, which is focused on financing measurable, insurable risks.

Delay risk must be treated with a combination of insurance, contractual risk transfer, and internally funded assumption of risk.

For revenue-dependent projects, some form of delay insurance is usually desirable. Coverage for delayed opening is more expensive than coverage for property damage alone. Premium rates for delay coverage are usually at least one and a half times the premium rate for property

damage. However, the amount (limit) of delay coverage is usually less than the full replacement value of the project.

Losses from delays attributable to sources other than insured property perils, such as those caused by unforeseen soil conditions, are transferred contractually where possible and appropriate. Liquidated damages are intended to compensate the owner for losses for which the contractor is responsible. Liquidated damages for CP-1 have been set at \$60,000 per day of delay.

Contingency funds are the principal source of financing for delay losses that cannot be transferred or insured.

2. Inefficacy

Product inefficacy occurs when a third party (usually a customer or client) suffers a financial loss by reason of tangible property being rendered incapable of full commercial benefit or rendered of less value as a result of the products failing to perform as specified, guaranteed, or warranted. A classic example of product inefficacy is the Denver International Airport baggage handling system.

Originally scheduled for completion in October 1993, the airport was a \$4.9 billion public works project. Due to its size and the necessity to move baggage quickly between flights, the airport selected a completely automated baggage handling system.

The system failed. Delivery carts were derailed, luggage was torn, and piles of clothes and other personal items were strewn beneath the tracks of the system. As a result, the airport could not open on schedule. Instead, the airport finally opened sixteen months behind schedule and almost \$2 billion over budget.

Like an airport, HSR is a complex system with many subcomponents that are complex systems themselves. Inefficacy is an inherent risk in developing complex systems. Inefficacy insurance exists, but for the most part is provided for certain types of products including alarm systems and solar energy systems. In such cases, the insurance is obtained by the product manufacturer or installer to protect against claims by third party customers.

Obtaining inefficacy insurance for a complicated system like HSR would be problematic at best. Some of the risk may be covered by surety bonds. As discussed under the section entitled “Design Error,” some of the owner’s risk is reduced by the use of design-build project delivery. Public/private partnerships also help mitigate risk to the owner. Under both systems the contractor or concessionaire controls both design and construction and is in a better position to warrant the work than either the designer or the contractor in traditional design-bid-build delivery.

3. Brand/Reputational Risk

Brand and reputation are considered to be among the most significant corporate risks in the private sector, more important than property loss or liability claims. Damage to reputation can lead to lost revenue or declines in shareholder value. In the extreme case, reputational damage can even lead to bankruptcy, as in the case of Arthur Andersen, once one of the five largest accounting firms.

There are reputational risk parallels in the public sector, especially for infrastructure mega projects. Reputational risks can be significant, perhaps nowhere more so than for a program like CHSRA's, which is one of the highest profile public works projects in the U.S. A tarnished reputation can lead to increased project opposition, loss of funding, higher borrowing costs, and inability to attract contractors or concessionaires (for public/private partnership).

Reputational damage can be the result of a variety of causes in a public works environment. Some of these causes can include failure to meet announced milestones or goals, budget overruns, insensitive treatment of parties at interest, maladroitness management of crises, and perceived lack of responsibility.

Treatment of reputational risk is generally a function of management controls, especially the development and testing of crisis management plans and scenarios. One risk-financing tool available for projects from some insurers is coverage for crisis management. Although more common for exposures such as political risk or system security breaches (e.g., credit card information or health records) some insurers have offered limited crisis management coverage for construction projects.

Coverage includes services of a crisis management firm from an approved list provided by the insurer. Also covered are amounts for printing, advertising, mailing of materials, and necessary travel of the insured's agents or the crisis management firm. Costs also covered include medical expense, funeral expense, psychological counseling, temporary living expense, cost to secure the crisis scene, and other related costs. Bodily injury and property damage liability is covered under general liability policies and worker injuries are covered under workers' compensation. Resulting economic losses are not covered. In general, crisis management is more of a mitigation activity than a risk-financing activity.

C. Public Liability

1. Bodily Injury

Construction is considered dangerous when compared to many other types of activities. Sometimes parties not associated directly with a project can be injured as a result of construction-related activities. These parties can be neighboring property owners or businesses, passers by, business invitees, or others physically exposed to injury from project activities.

Most of the perils that can cause property damage can also result in bodily injury, so a separate list of perils is not necessary here. However, in order for a project owner or contractor to be legally liable for bodily injury, some form of negligence must be involved. The negligence could create a hazard that is the proximate cause of the injury that is caused by the existing peril.

The owner or contractor is not responsible for injury caused by a flood, for example, unless the owner or contractor did something or failed to do something that resulted in a hazard that caused or contributed to the injury. Grading an area in a way that resulted in water runoff which created a flash flood condition resulting in injury to a neighboring resident could be considered negligent and could result in liability to the party, or parties, responsible for the grading.

One can also become contractually liable for the tort (civil wrong) liability of another by contractually assuming that obligation. See Section E. below for a discussion of contractual liability.

2. Property Damage

The same perils and hazards that can cause damage to owned property could also cause damage to the property of others. As is true for liability for bodily injury, property damage liability derives from negligence. Thus, if the water runoff example described above caused the flash flood to destroy a neighboring residence, the party responsible for the grading could be held legally liable for the damage to the neighbor's property.

3. Business Interruption Liability

Damage to property associated with another's business can result in liability for business income losses or extra expense to stay in business. If the damage decreases the revenues or increases the expense, the negligent party may be obligated to pay for the net loss.

Lost revenues or increased expenses can also result even when there is no direct damage to the other party's business property. If there is a "loss of use" of the property, even without direct physical damage, it is generally possible to obtain insurance coverage for that liability.

Other types of claims for business income from third parties are not always insurable unless somehow related to property damage liability (including loss of use), or to bodily injury. In some cases, use of contingency funds may be required to finance a legal liability related to business interruption.

4. Inverse Condemnation

A type of economic loss unique to public agencies arises out of the legal theory of "inverse condemnation." Inverse condemnation occurs "when the government takes or damages

property without filing a condemnation action.”⁴ Under the principle of “eminent domain” the government may take private property for a greater public use. Large scale projects that are geographically spread out often require such taking.

Under the Fifth Amendment to the U.S. Constitution, and Article I, Section 19 (formerly Art. I, § 14) of the California Constitution, just compensation must be paid when private property is taken or damaged for public use. A property’s economic value may be lessened or a portion of a property may be damaged, resulting in a “taking” even though a condemnation action has not been filed.

An example of inverse condemnation might occur where a public agency constructs a passenger rail system that blocks direct access to a retail business from a highway. If the business has been dependent on highway access ensure a steady flow of customers, construction of the rail line may inhibit the access, thereby reducing the business’ profit. The property has been “damaged.”

Because the protections to the owner under inverse condemnation theory are constitutionally based, negligence is not an issue, so a plaintiff only need prove that some form of damage, including reduced value, has occurred. Damage may be unintentional, but the government agency is still obligated to compensate the owner if a court sustains an inverse condemnation action by the property owner.

Therefore to some extent, because negligence is not involved and because losses can be economic, but not a tort, which is the subject of liability insurance, insurance is not an appropriate risk-financing mechanism for inverse condemnation claims. A significant exception may occur when a loss of use of the property occurs, in which case there may be coverage for property damage liability if the policy is properly structured. Otherwise, the inverse condemnation exposure must be handled from some other risk-financing source such as contingency funding.

D. Worker Injury

1. Employee Injuries

As construction work is comparatively dangerous, injuries at work sites are fairly common. All of the perils mentioned in the property risk analysis discussion above as capable of causing damage to property can also be causes of injury. In addition, deliberate use of force can result in injury, whether caused by violence or by legal means such as law enforcement or security.

Generally, a form of no-fault insurance known as workers’ compensation covers worker injury. Coverage is statutorily defined and is the worker’s “exclusive remedy” against his or her

⁴ Nossaman LLP web log <http://www.nossaman.com/eminentdomain--inverse-condemnation-regulatory-takings>

employer. In other words the worker cannot sue the employer because of the injury. Workers' compensation provides the benefits according to the law.

An exception to the "exclusive remedy" doctrine is provided in federal laws governing employment-related compensation for injuries. Among these is the Federal Employer's Liability Act (FELA) which applies to employees of railroads. FELA allows monetary payouts for pain and suffering, decided by juries based on comparative negligence rather than pursuant to a pre-determined benefits schedule under workers' compensation.

Compensation under FELA can be many times the compensation for equivalent injuries under state workers' compensation laws. FELA allows for compensation for pain and suffering and for loss of enjoyment of life.

Another federal act that precludes state workers' compensation law is the U.S. Longshore and Harbor Workers Act (USL&H). This federal statute covers injury compensation for most waterfront workers. It applies to maritime workers, other than seamen. Court decisions have expanded the reach of USL&H to "navigable waters." Thus, even inland waterways may provide the nexus for USL&H to apply. Like FELA, USL&H provides for much higher compensation than state workers' compensation.

It is more difficult to make a case that construction workers on dry land fall under USL&H, and unless the contractor is a railroad, FELA should not apply. Nevertheless, attempts to obtain coverage under one of these federal acts are common even when logic would seem to dictate that neither applies.

2. Third Party Over Actions

Although the "exclusive remedy" provision of workers' compensation laws prevents lawsuits against the employer, except in the case of the federal statutes, nothing prevents an injured worker from suing some other party for compensation for injuries. These other parties on a construction project may include the owner, the general contractor (if the injured party is an employee of a subcontractor), a separate subcontractor, other service providers, and any third party whose negligence might have contributed to the accident. Such actions are treated as general liability claims by the defendant.

In addition to actions by the injured worker, the workers' compensation insurer for the worker's employer may also pursue a "subrogation" action against a third party. In workers' compensation subrogation, the insurer exercises its right to recover its expenditures for medical and indemnity benefits to the injured worker if a third party is liable for the injury. Because of the nature of construction work and multiple employers working on the same site engaged in relatively dangerous activity, workers' compensation subrogation is common in construction.

3. Valley Fever

Valley Fever is a potential hazard in the areas where CP1 –4 will be active. According to the California Department of Public Health:

Valley Fever is an illness that usually affects the lungs. It is caused by a fungus called Coccidioides. Coccidioides lives in the dirt. A hardy form of the fungus can live for along time under harsh environmental conditions such as heat, cold, and drought, and is spread through spores in the air when the dirt is disturbed. An estimated 150,000 Coccidioides infections occur each year in the United States, although more than half of these infections do not produce symptoms.

Valley Fever fungus is found in some areas of the southwestern United States, and in parts of Mexico and Central and South America. These areas have dirt and weather conditions that allow the fungus to grow. In California, the fungus is found in many areas of the San Joaquin Valley (Central Valley).

People can get Valley Fever if they breathe in the dust from the dirt that contains fungal spores. Fungal spores can get into the air when dirt containing the fungus is disturbed by digging, during construction, or under strong winds. Construction and farm workers, military personnel, archaeologists, and others who breathe in dust from the dirt in the areas where Valley Fever is common may be exposed to the fungal spores.

Valley Fever is difficult to prevent. There is currently no vaccine; efforts to develop a vaccine are ongoing. Persons at risk for Valley Fever or for getting severe illness from Valley Fever should avoid exposure to dusty air in areas where Valley Fever is common. Those exposed to dust during their jobs or outside activities in these areas should consider respiratory protection, such as a mask, during such activities.

Ten members of a 12-person construction crew excavating a trench developed Valley Fever (coccidioidomycosis), an illness with pneumonia and flu-like symptoms. Seven had abnormal chest x-rays, four had rashes, and one had an infection that spread beyond his lungs. The 10 ill crew members missed at least 1660 hours of work; two of the workers were on disability for months.

Some of these workers were counted among the over 1,000 Californians hospitalized with Valley Fever every year. About eight of every 100 people hospitalized die from the infection annually. Yet workplace health and safety plans often do not even mention Valley Fever, despite the fact that it can be disabling or fatal.

Workers who dig or otherwise disturb soil containing the Coccidioides immitis fungus are at risk for getting the illness. The fungus lives in the soil in parts of California, particularly the Central Valley. When people inhale the fungal spores released when the soil is disturbed, they may get Valley Fever.

Some workers at higher risk for Valley Fever include wildland firefighters, construction workers, archaeologists, military personnel, and workers in mining, gas and oil extraction jobs. Highly endemic counties, i.e., those with the highest rates of Valley Fever (more than 20 cases per 100,000 population per year), are Fresno, Kern, Kings, Madera, Merced, San Luis Obispo, and Tulare.⁵

The implications of this information are significant for CHSRA. The two major implications are:

1. Construction work in the Central Valley should include a prevention plan addressing the Valley Fever hazard that includes work controls, respiratory protection, and dust control; and
2. Exposure to the *Coccidioides immitis* fungus may have long-term health consequences that complicate the workers' compensation situation.

Occupational diseases, such as asbestosis, have multiple complications. Workers' compensation benefits can include lifetime medical care in addition to statutory disability indemnity benefits. Ongoing medical care obligations may make it difficult to close out workers' compensation policies when the policies are "loss sensitive," meaning that the final cost of the coverage is not determined until all the open claims are closed. The effect of this hazard on risk financing for CP 2-4 projects is discussed in Chapter V.

4. Heat

Heat is a significant occupational hazard in California's Central Valley. Temperatures frequently reach into the 100s and there are many reports of injury and even death among farm and construction workers in the area.

Thus, in addition to the hazards typically found in construction, CHSRA's projects have the additional and constant, at least in the summer months, exposure to serious injury caused by heat.

Obviously, mitigation orders including a plan to keep workers hydrated, provide mandatory rest breaks, and require protection is essential. Heat injuries are covered by workers' compensation insurance.

5. Employment Goals

As part of the Project Labor Agreement, the CHSRA has established a Community Benefits Agreement (CBA) for the construction program. This agreement attempts to facilitate careers in the construction industry, promote employment opportunities for certain classes of workers,

⁵ California Department of Public Health, available at:
<http://www.cdph.ca.gov/healthinfo/discond/Pages/Coccidioidomycosis.aspx>

remove the barriers to small business, and provide an orderly settlement of labor disputes.

The CBA outlines various classifications of targeted workers for the project, including “disadvantaged workers” which are defined as those that are homeless, a single custodial parent, those experiencing chronic unemployment, those who have a criminal record, those workers lacking a GED or high school diploma, those on public assistance, those that are emancipated from the foster care system, and veterans. The CBA also targets “Economically Disadvantaged Areas” which are certain zip codes that have median household income less than \$32,000.

The intent of the CBA is to promote, train, and employ disadvantage workers and workers from economically disadvantage areas throughout the Central Valley. Although the CBA may yield social benefits to communities along or near the project, great care must be taken when employing individuals with little to no experience in construction industry.

The CBA states employees are responsible for obeying all safety standards established for the project. The safety rules must be published in an area easily accessible to workers. Employees who fail to comply with safety standards are subject to discipline and possible discharge. All workers employed on the project, whether considered disadvantaged or those from economically disadvantage areas, must comply with and pass a pre-employment drug screening.

Irrespective of drug screening or compliance with safety standards, the CHSRA and its contractors and subcontractors will need to employ extra measures to ensure these classifications of workers are properly trained in their respective trades, including training in all safety measures. If a strong training program is not implemented or if strong safety oversight is not exerted in the field on a consistent basis, the project could experience a higher frequency of workers’ compensation claims.

E. Contractual

Another major exposure to parties to a construction project is tort liability assumed contractually. A contractor may agree to indemnify an owner for the owner’s legal liability resulting from injury to a third party related to the construction project. The contractor then becomes *contractually* liable for the owner’s *legal* liability. However, state statutes limit the effectiveness of this contractual transfer of risk. Insurance policy and endorsement forms further limit contractual risk transfer effectiveness.

Anti-indemnity statutes have been modified in most of the last five or six sessions of the California legislature. The statutory changes in recent years have reduced opportunities for an owner or general contractor to obtain protection through indemnity agreements with subcontractors or other parties.

In a construction agreement, indemnity from a subcontractor for active negligence of an owner or general contractor is prohibited. For a public agency the restrictions are even more severe. The anti-indemnity protections extend to contractors, subcontractors, and suppliers of goods or services when a public agency is the indemnitee. None of these parties can be required to indemnify the public agency for its active negligence.

The anti-indemnity statutes have evolved to the point where a public agency owner can only be protected contractually for *passive* negligence. Any active negligence on the part of the owner is excluded from indemnification under the statute. The difference between “passive” and “active” negligence can be a matter of interpretation.

The additional insured endorsement forms used by the insurance industry for construction contracts have also been modified in light of the statutory changes and because of insurance industry concerns about the growing cost of coverage for additional insureds.

The standard insurance endorsements for adding additional insureds issued in 2013 go even further than modifications in earlier years. The forms cover an additional insured only if the loss is caused by the named insured (subcontractor). Losses caused by third parties are not covered. The forms also limit the coverage to the amount specified in the contract or the policy limit, whichever is less.

All of these changes have made the prospect of obtaining coverage as an additional insured more uncertain. Every legislative and policy document change has made coverage more restrictive. However, since the most recent and most sweeping of these changes have occurred during the current calendar year, there has not been sufficient time for the meanings of these changes to be interpreted by courts.

Therefore, an already uncertain protection through coverage as an additional insured has been made even more uncertain by these changes. In other words, attempting to protect oneself through contractual transfer of risk has become a risk in itself.

Coverage for additional insureds is one of the most highly litigated aspects of insurance coverage on construction projects. Because the statutory and form changes are new for this year, it is likely this will become an area of even greater contention in the future. In the absence of case law with the new forms, outcomes are even more uncertain.

It may be some time before the courts work out the exact effects of these changes. In the meantime, owners and general contractors face greater than ever uncertainty in attempting to obtain protection through indemnity agreements and additional insured status.

This uncertainty may propel portions of the construction industry to make greater use of consolidated insurance plans such as owner controlled and contractor controlled insurance programs (CIP). In a CIP one party, the “sponsor,” arranges major coverages through a single policy or program, thereby providing all of the participants in a project with “named insured”

status, not “additional insured.” As a result, there is much less need to depend on indemnification, which removes the uncertainties created by statutes, and the concerns about limited coverage for additional insureds are eliminated.

1. Agreements with Other Agencies

CHSRA is entering into agreements with numerous municipal, special district, and transportation public agencies. Since CHSRA is usually the party asking for accommodation, CHSRA is often asked to take on risk that normally might not be CHSRA’s responsibility.

If part of that accommodation involves taking on tort liability of another for bodily injury, property damage, or personal and advertising injury, CHSRA may not be covered by insurance arranged by a general contractor if CHSRA’s only basis of protection is status as an additional insured under the general contractor’s policies.

Unless CHSRA arranges its own liability insurance coverage of some form, or is a named insured under a general contractor’s liability insurance program, the only source of funding for contractually assumed liability will be project budget.

2. Agreements with Commercial Railroads

CHSRA will interact with commercial freight railroads (“Class I”) in many parts of the alignment and in many different ways. Some track will parallel track owned by Class I railroads and will be in the railroad right of way. There will be grade-separated crossings where the two interact. CHSRA will need to acquire certain property from the freight railroads. CHSRA contractors will need right of entry permits from the Class I railroads to work on railroad property. All of these interactions create indemnity and insurance issues.

The Class I railroads are very specific about their requirements for indemnity and insurance and are in a position to impose stringent requirements as a condition for cooperation with CHSRA. Because of certain exemptions granted to the railroads through federal action and for other reasons, many of the anti-indemnity restrictions that apply to general contractors, owners, and others in construction contracts do not apply to contracts with the railroads.

However, the restrictions of coverage for additional insureds found in the current additional insured endorsements and policy forms are not dependent on the construction anti-indemnity statutes. Therefore, CHSRA may be in a position of having to indemnify the railroads for potentially large losses that will not be covered by insurance arranged by a general contractor.

The Class I railroads require indemnification for both passive and active negligence on their part. They also want to be additional insureds under construction liability insurance policies, and they demand high limits (amounts) of coverage.

The Class I railroad requirements are independent of causation. In other words, they expect indemnification whether or not an insured caused the loss. A third party could cause a loss with no involvement of either CHSRA or its contractors, and the railroads would still expect indemnity even if the loss was due primarily to negligence of the respective railroad.

The causation issue is a major item in recent additional insured endorsements. Coverage for an additional insured applies only if the named insured (the indemnifying contractor) or someone acting on behalf of the named insured (e.g. a subcontractor) *caused* the loss. Therefore, if a loss occurs that was not caused by the named insured or its agent, the railroads would still expect indemnification from CHSRA. If upheld, the indemnification would likely have to come from the project budget.

An extreme, but possible, example of how this indemnity situation could work against CHSRA is as follows.

Assume that CHSRA has agreed with a local municipality to allow that municipality to construct a grade separation and the location is adjacent to a Class I railroad's operations or property. Further assume that because of a temporary hazardous condition, the municipality's construction contractor building the grade separation has constructed a restraining barrier with warning signs to keep persons away from the hazardous condition.

In the evening after the contractor's crew has left for the day, an employee of a Class I railroad making inspections unrelated to the grade crossing approaches the site, sees the restraining barrier and drives his truck around it, despite the warning sign. Because the employee is unaware of the nature of the hazard, he does not anticipate the dangerous condition caused by loose debris and loses control of his truck, crashing it into a completed part of the grade separation structure, causing it to collapse.

At the same time, a Class I railroad freight train is approaching the location. The engineer cannot see the collapsed grade separation structure and crashes into it, causing the train to derail. The train is carrying toxic material, which is released after the derailment. The toxic material sickens residents near the scene and some suffer permanent bodily injury. Many are forced to evacuate their homes, and some businesses are forced to close for an extended period, suffering loss of income.

Many claims and lawsuits ensue. Most are directed toward the Class I railroad involved but some may include CHSRA, the local municipality and the municipality's contractor in their suit. Whether or not CHSRA or its contractors are sued, based on the indemnification demanded by the Class I railroads, it is likely the railroad involved in the accident would tender the claims to CHSRA for indemnity and defense.

If a jury finds that the Class I railroad is negligent 100% at fault for the accident, CHSRA might not have any indemnity obligation, depending on the outcome of negotiations now under way. However, if a jury found the railroad was 99% at fault, and the municipality's construction

contractor was 1% at fault (for not constructing an impenetrable barrier around the location), CHSRA could be required to indemnify the railroad for 99% of the jury award and allowable costs.

If CHSRA's only insurance protection was status as an additional insured under its own contractor's liability insurance, there would likely be no coverage under that contractor's policy. This is because the loss in this hypothetical example was not caused by the contractor (named insured) or someone working on the contractor's behalf, a requirement of the current forms.

There are possible ways around this dilemma, including the use of manuscript (custom drafted) endorsement or possibly older forms without the newer restrictions. Nevertheless, there are many reasons why contractual risk transfer is precarious and one would not want to rely too heavily on workarounds.

F. Environmental

1. Environmental Impact

According to the Environmental Impact Reports for the Merced to Fresno and Fresno to Bakersfield segments of the Initial Operating Segment (IOS) the following potential impacts exist.

- Air quality
 - Volatile organic compounds (VOC) emitted by on-road construction equipment
 - Dust caused by construction and material hauling
 - VOC emissions from paint
 - Concrete batch plants
- Noise and vibration from pile driving and equipment operation
- Biological resource impairment
 - Barriers to mammal movement
 - Introduction of noxious weeds
- Hazardous materials and waste
- Visual and aesthetic resource impairment
 - New sources of light and glare
 - Visual nuisance adjacent to residential and historical resources

- Disturbance of cultural, archaeological, and paleontological resources
 - Historic resources
 - Native American artifacts

Mitigation plans have been or will be developed as part of the cost and schedule risk assessment. Most of the exposure for these environmental impacts is in the form of lawsuits, which can result in additional cost by requiring further mitigation measures or can impact the project schedule by causing delay. Risk financing for such exposures usually comes from project budget, i.e., the risk is assumed by the owner or contractor as contractually allocated.

2. Third Party Liability

Third party liability for environmental incidents can come as a result of bodily injury or property damage caused by the incident, or can be in the form of cleanup and remediation costs. Examples of incidents could include spills of hazardous substances or release of existing undisturbed contaminants through construction activity. These types of losses can be insured under contractors pollution liability (CPL) insurance.

3. Cleanup

Contamination of the environment can result in regulatory agency orders to clean up the contamination. Another possibility, depending on the circumstances, is regulatory agency imposed fines and penalties.

The former can be insured through CPL insurance described above. The latter may possibly be insurable depending on various factors, but in general, coverage is unlikely. Clean up responsibility may be contractually allocated, but it is difficult and presumably against public policy to contractually transfer responsibility for fines and penalties.

G. Professional

1. Design Error

Civil infrastructure design involves a fairly large number of people making decisions on a multitude of factors to coordinate a project involving thousands of parts. A few of the outcomes that can arise from design error include:

- Unsuitability of materials or components chosen for the design;
- Structural failure of components when subject to real world usage resulting in substantial repairs;
- Unexpected contamination, such as mold growth, resulting from the material selected;

- Non-compliance with regulations or ordinances;
- Owner dissatisfaction with results;
- Unusable design in real world settings;
- Quality of component unacceptably low;
- Incompatibility or inability to interface with existing structures, systems, or components; and
- Untested or unfamiliar concepts that require special training or modification to work.

Design liability is somewhat of a quandary for a project owner, especially in the public sector. Insurance for this exposure is comparatively scarce and expensive. Many, if not most, design professionals have inadequate limits to cover a significant loss. Furthermore, establishing that a loss is due to a design error rather than a construction error or failure of materials can prove difficult. All of this is complicated by the fact that the owner is the most likely claimant against a design professional, other than the prime construction contractor.

As a result of the complexity in this area, an owner generally bears a significant risk of design error, regardless of imposed insurance requirements or indemnity/hold harmless agreements. The vast majority of design-related claims are attributed to allegations of cost overruns and time delays. Contractually assumed liability for professional errors and omissions is virtually uninsurable by the designer.

The use of design-build project delivery reduces the owner's risk of design error. In the design-bid-build project delivery method, design and construction come under the umbrella of a single entity, including joint ventures. This contrasts with design-bid-build project delivery in which a separate design entity and a separate construction firm contract with the owner individually. Under design-bid-build it is more difficult to pin responsibility for a loss and the participants are less willing to warrant the work, as each loses some control over the process.

Thus, in design-build contracts the owner is in a position to obtain performance warranties and transfer more of the risk to the design-builder than is possible in a design-bid-build contract. Generally, the same principle applies in a public/private partnership (P3). In the P3, the concessionaire takes on even broader responsibility for the project. In both of these methods, the owner's risk moves somewhat from the risk of design error resulting in project problems to risk concerning financial strength of the contractor or concessionaire.

In addition to contractual risk allocation as a risk management tool, various forms of insurance are available to help protect the design professional. It is important to keep in mind that protection of the design professional against allegations of professional negligence is the

primary purpose of the coverage. It is not intended to provide third party liability protection for the owner, although that can be the outcome in some cases.

See the discussion of various insurance designs for professional liability to protect the owner in Chapter V Findings, Conclusions, and Recommendations.

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IV. Risk-Financing Alternatives

A. Basis of Cost

The basis of cost in construction risk-financing consists of:

- Insurance premium for transferring risk;
- Retained losses (such as losses within deductibles, self-insured retentions, and uninsured loss); and
- Administration.

Consolidation in an OCIP or CCIP occurs when certain coverages each party would normally buy separately to protect its own interests are purchased in a single transaction on behalf of all parties. These coverages include workers' compensation, general liability, and excess liability.

Some forms of insurance such as contractor's equipment, auto liability, and professional liability also protect the interests of specific parties. Of these, only professional liability is practical to consolidate because of loss tracking difficulties and insurable interest issues in the other lines.

This report discusses the issue of consolidated professional liability separately. Although there may be other benefits, identifiable savings in consolidation of this coverage are not likely. Therefore, this cost discussion does not attempt comparison between consolidated and traditional professional liability insurance.

Other coverages that may be necessary include property (builder's risk), pollution liability, and possibly *Force Majeure* (acts of nature etc.) insurance. A single party, with or without an OCIP, normally would buy these coverages for a project. Therefore, these coverages will not be included in the cost comparison. However, direct purchase of any of these coverages by the owner, eliminates any contractor markup and may also result in more competitive quotations from insurers.

B. Financing Mechanisms for Consolidated Coverages

The principal alternatives for insuring risks on a project are "traditional" and "consolidated." Consolidated programs are of two varieties: owner controlled (OCIP) and contractor (or construction manager) controlled (CCIP). The principal types of construction risk coverages and ways in which they may be handled are illustrated in Table 1. Other permutations are possible.

Table 1

Coverage	Traditional	OCIP	CCIP
<i>General and XS Liability</i>	Each contractor, sub, owner, CM, designer, buys own - renews annually. Indemnities flow upward.	Owner buys for all parties for length of project plus extensions (e.g., completed operations).	General contractor (GC) buys for all parties. Owner is “additional insured” or may be named insured.
<i>Workers’ Compensation</i>	Each contractor, sub, owner, CM, designer, buys own - renews annually.	Owner buys for all contractor parties for length of project.	General contractor buys for all tiers of contractors.
<i>Builder’s Risk</i>	Usually owner, but GC may buy.	Owner usually buys, but GC could buy.	GC, but owner could buy.
<i>Errors and Omissions</i>	Design firms, but owner could buy project policy.	Owner sometimes buys, but design firms still carry practice coverage.	Owner, contractor, or design firms could buy.
<i>Pollution Liability</i>	Contractor to extent available. Owner may also buy.	Owner may buy to protect its own interests.	General contractor may buy.
<i>Surety Bonds</i>	Contractor	Contractor	Contractor
<i>Auto Liability</i>	Contractor	Contractor	Contractor
<i>Contractors’ Equipment</i>	Contractor	Contractor	Contractor
<i>Force Majeure (rare)</i>	Contractor	Owner or contractor	General contractor
<i>Other (e.g. Aircraft)</i>	Contractor	Owner or contractor	Owner or contractor

1. “Traditional” Insurance

Traditionally, construction insurance is a patchwork program of coverages, indemnities, policies, brokers, and insurers all covering pieces of a major project or program. Each contractor and subcontractor arranges insurance for its business “practice” at the beginning of a coverage period, during which multiple projects will be added as the contractor acquires new business. The coverage is tailored to the estimated current and future needs of the contractor’s business during the forthcoming year (policy period) without factual knowledge of the particular needs of many of the projects it will eventually cover.

As a result, many contractors buy coverage to comply with the broadest possible range of requirements they may come across, and insurers price for such contingencies. Cost aside, this

is an inefficient way to arrange insurance on a project. This method tends to result in overlap of coverage and may also fail to address specific risks unique to a project.

Additional project participants in traditional insurance programs, including construction managers, project owners, design professionals, and others also arrange their own insurance programs that are aligned with the needs of their respective businesses. In some cases the programs may not be designed for construction risks.

Typically, these other participants in a traditional program expect a contractor or subcontractors to cover the construction risks and protect those parties to the project that are not in the construction business, such as design professionals and the owner. This protection is supposed to be achieved through indemnity and insurance requirements in contracts. Often these requirements are over-broad, unrealistic, unattainable, or inappropriate. The risk transfer approach is also an inefficient way to manage project risk for reasons discussed in several parts of this report.

The mechanisms for risk transfer include indemnity agreements (promise to pay loss) and insurance (financing to pay for the loss). The indemnified party is added as an additional insured on the subcontractor's insurance policy. As indemnitees (party being protected) have become more demanding over recent years, the burden on the indemnitor (party providing protection) and their insurers has sometimes increased to oppressive levels.

As a result, subcontractors and insurers have fought back through legislation, litigation, and narrowing the scope of coverage provided to additional insureds through modification to insurance policy endorsements. The result of all this "positioning" is greater uncertainty of protection through contractual risk transfer.

2. Consolidated Insurance

As a result of the inefficiency of the system described above and the increasing uncertainty of contractual risk transfer as a protection method, a system for consolidating coverage and insuring on a project basis, rather than on an individual practice basis, has gained acceptance and prominence in large projects or construction programs. Such programs are known variously as "consolidated programs," "coordinated programs," or "wrap-ups." The industry uses abbreviations such as "OCIP" for owner Controlled Insurance Program, "CCIP" for contractor controlled insurance program, or just "CIP" for consolidated (or "coordinated") insurance programs.

A "sponsor," which could be an owner, general contractor, or construction manager, develops the insurance program and requires the remaining construction contractors and subcontractors to subscribe to the program. To make the program financially viable, the sponsor requires the participants to exempt the project from coverage under their regular insurance programs. This step produces a premium credit to the individual insured contractor, which the contractor is supposed to remove from their contract cost.

The only insurance coverages to which this consolidation process applies are general liability (including excess liability) and workers' compensation. These two lines may account for 90% or more of a project's direct insurance cost. Along with efficiency and assurance of adequate coverage through consolidation of insurance, proponents of consolidated insurance programs claim substantial potential savings.

An OCIP is a technique for consolidating the workers' compensation insurance and general liability insurance coverage for most participants in a large construction project. The project owner, also referred to as the OCIP "sponsor," buys insurance coverage for qualified parties and recovers from the contractors and subcontractors the amount each would have spent on these types of insurance absent the OCIP.

From an insurance underwriting standpoint, the OCIP is a way to underwrite the *project*, rather than underwriting each of the individual construction companies constructing the project. Usually the OCIP sponsor also arranges coverage for the property under construction, called "builder's risk" or "course of construction" insurance.

Consolidation of coverage increases the volume of insurance premium for a single insurer or insurance group and should generate discounts on that basis alone. In an OCIP there is one insurer and one insurance broker instead of many. If losses are kept low through a concerted safety and claims management effort, additional savings can accrue to the OCIP sponsor (the project owner) as return premium. A variant of this consolidated concept is called a "contractor controlled insurance program" (CCIP) in which a contractor or construction manager acts as sponsor.

There are a number of subtle differences in the way the two types of programs interact with the parties.

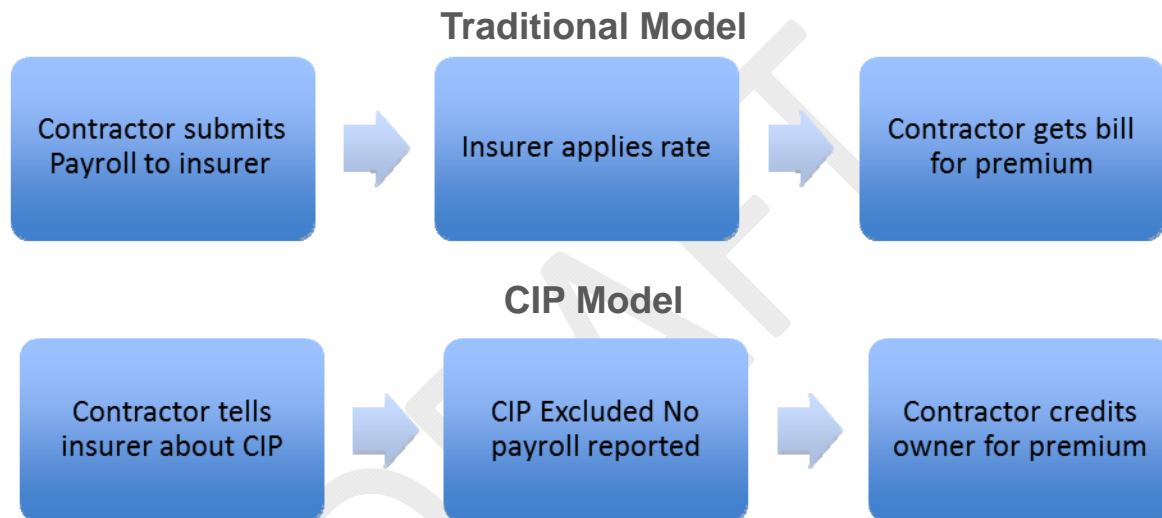
First is the matter of control. In a CCIP, the owner relinquishes control of the risk financing to the general contractor. In doing so, the owner gives up most control over claim settlements, including any community relations benefits. The owner also yields much of the control over the transition process to permanent insurance, including continuity of coverage through the statute of repose.

Another main difference between an OCIP and a CCIP is disposition of savings. Most CCIP sponsors offer the owner a fixed price for the insurance component with little or no saving opportunities. Even if a sharing agreement applied, the owner would find it very difficult to verify savings in a CCIP for a variety of reasons, not the least of which is the problem with obtaining information. Another is the long settlement times for claims and financial close out of the program.

CCIPs can work, despite the issues described above, when a single general contractor is responsible for the work and if certain other conditions are present. In multiple prime contractor situations a CCIP is no different from a traditional program from the owner's perspective.

To fund an OCIP or CCIP (generically "CIP") the sponsor collects premiums that would have been paid by each insured and uses those premium dollars to buy the consolidated coverage. Those who are covered by the consolidated program do not pay premiums to the insurer. The exhibit below illustrates this concept.

Exhibit IV-1
Traditional Model vs. CIP Model

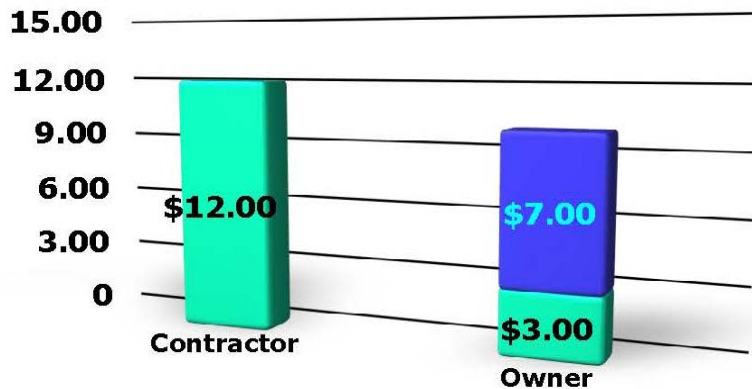


This is not just a pass-through cost. Theoretically, savings occurs in consolidated programs by the operation of two factors:

1. A discount for volume purchasing of insurance; and
2. A potential for partial return of premium if loss experience is good ("loss sensitive").

Exhibit V-2 illustrates how the discount portion of this concept works. The rates shown are hypothetical. Our best estimates of current market rates are provided in the next chapter.

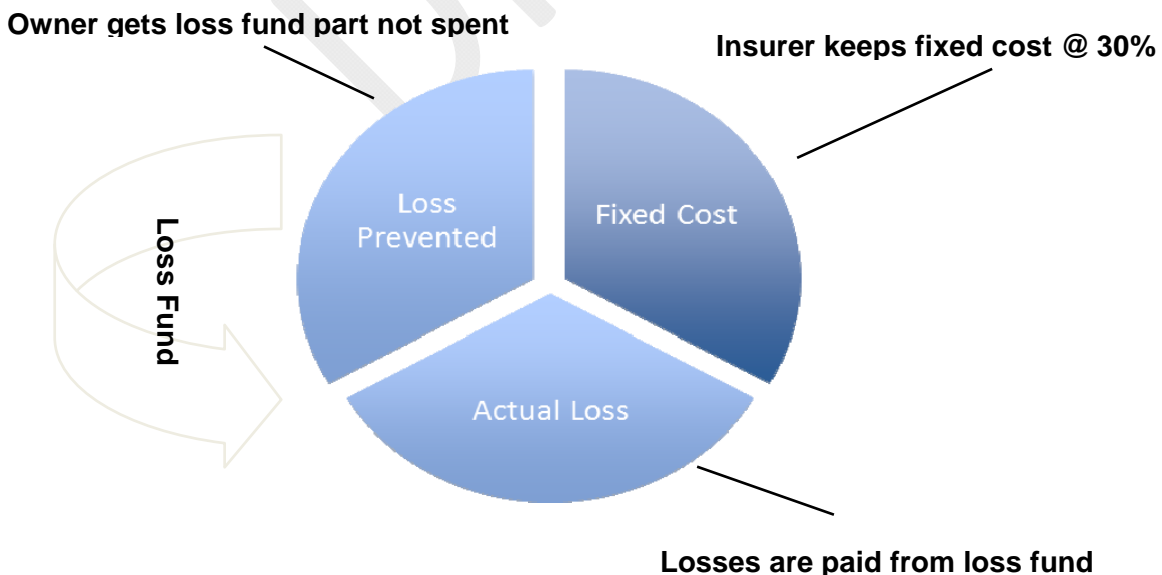
Exhibit IV-2
Comparison of Insurance Cost for Individual Contractor vs Owner in OCIP



The owner pays a reduced rate for the consolidated coverages. In this exhibit the discount is 30%. In practice discounts can range from zero to more than 30%.

Additional savings can come from good loss results. Most OCIPs are structured as “large deductible” plans. In a typical OCIP the “deductible” is actually a charge against a portion of the premium known as the “loss fund,” described below.

Exhibit IV-3
Components of OCIP Premium



The principal purpose of a large deductible plan is to reduce the amount of premium subject to taxes and fees. Because the large deductible engenders a significant premium discount, total “premium” is reduced. Deductibles of \$250,000, \$500,000, or more per occurrence are common. Final cost is a function of losses and can be expressed by the formula:

FINAL COST = PAID PREMIUM – FIXED COST – LOSSES – RETURN PREMIUM.

In a consolidated program each occurrence deductible may apply either to each or to both lines of coverage (workers’ compensation and general liability). In other words, the same occurrence involving both employee injury and damage to a third party’s property could cause either one deductible or two deductibles to apply, one for each line of coverage, depending on how the deductible is structured. If deductibles are combined, the maximum cost to the insured per loss is reduced, but the minimum fixed cost premium is higher. Multi-line per occurrence deductibles have not always been available. More recently, however, insurers are offering multi-line deductibles as a result of competitive pressures.

The following section shows probable financial outcomes for CP-2 through CP-4 under both an OCIP program and a general liability-only program compared to a “traditional” program.

V. Cost/Benefit Analysis

There are several valid reasons for public works projects to be covered by a public entity-sponsored OCIP. One is potential cost savings. Estimating costs and savings under an OCIP is problematic. There are many variables that can affect the financial results as discussed below.

Ability to obtain competitive pricing. This item is a function of market conditions, negotiating ability, skill in preparing underwriting submissions, and to some extent, luck. Timing is a big factor. An OCIP can be planned for in a hard market (insurance is expensive and difficult to obtain) only to have the market soften (competitive pricing and high availability) before the program can be put in place. In a soft market, the financial advantage of an OCIP is reduced because the market for contractor insurance often drops in price faster than for an OCIP, which is already priced lean. Conversely, in a hardening market contractor insurance prices rise faster than rates for an OCIP. Finally, OCIP rates can be locked in for up to five years on a project. Contractor rates change annually.

Ability to meet schedule. Not meeting the schedule plays havoc with the financial model for an OCIP and can cause potential savings to evaporate. Delays can turn savings into loss. Worse, significant delays can cause loss of coverage, or expiration of coverage before project completion.

Ability to obtain insurance credits. Savings in an OCIP presumes credit from the contractors for their cost of insurance. To the extent the owner is unable to obtain those credits, savings may disappear, or at the least be difficult to determine with a high level of certainty. This too is highly affected by market conditions. When construction activity is low and contracts few, contractors will attempt to cut cost any way possible. Providing the contractor with insurance provides the contractor with an opportunity to cut cost.

Good loss control. OCIPs are usually loss sensitive, meaning the ultimate cost is a function of losses. If losses run out of control there may be no savings. On the other hand, if the owner has an aggressive safety program, significant dividends in the form of return premium are possible.

Good administration. Administrative effort is needed to assure enrollments and credits and to keep track of payroll.

A number of factors could cause the range of costs to vary. Any workers' compensation reform, recent court decisions, or rate filing changes could result in different workers' compensation rates. As workers' compensation premium is the largest component of a project's insurance cost, reduced premium rates would diminish the savings under an OCIP. Industry experts, however, have been anticipating hardening of insurance markets since 2010. The California insurance market is finally seeing workers' compensation rate increases of 20% - 30% on recent renewals.

It is our opinion cost is not the most important factor in selecting an insurance approach for a large construction program. Nevertheless, the other factors alone may not justify a particular course of action to some. Therefore, a cost/benefit analysis is crucial in an insurance alternative study.

A. Estimated Costs - OCIP Program

Without actual data and firm quotations for insurance, the numbers presented in the Exhibits below can be only estimates. We believe these data provide order-of-magnitude and comparative information useful for decision making. The data should not be used to forecast exact costs. Note that the actual numbers will vary with the amount of payroll reported. Also, the data does not account for the time value of money. We have not attempted to apply time value discounts for the following reasons.

- Cash flow timing is negotiable. Until the organization directs its insurance broker to obtain firm quotations, it is difficult to estimate how the timing of premium and loss dollars will occur.
- Current interest rates are very low and therefore less of a factor than in some other periods. Should inflationary pressures increase, rates may become much more of a factor.

Exhibit V-I displays the most likely financial outcome for an OCIP sponsored by CHSRA. The table displays various loss levels (losses expressed as a percentage of the maximum cost) based on an assumed hard cost construction value of \$2,300,000,000 and payroll of \$345,000,000.

Exhibit V-1
Cost Comparison - Traditional vs. OCIP @ \$14.30 Contractor and \$10.00 Owner Rate

Assumptions:

Construction cost:	2,300,000,000	OCIP combined max rate:	10.00
Estimated payroll:	345,000,000	Tax rate:	Included in fixed
Contractor combined rate:	14.30	Loss conversion factor:	1.08
OCIP fixed cost rate:	3.60	Administration rate:	0.00154
WC/GL maximum loss rate:	6.40		

OCIP Cost Comparison:

Loss Assumptions	50% Better than Maximum Loss	25% Better than Maximum Loss	Maximum Loss
Traditional			
Contractor Insurance Credit	44,401,500	44,401,500	44,401,500
OCIP			
OCIP Fixed Cost	12,420,000	12,420,000	12,420,000
Converted Losses	11,923,200	17,884,800	22,080,000
Administration	3,536,250	3,536,250	3,536,250
Estimated Total OCIP Cost	27,879,450	33,841,050	38,036,250
OCIP Benefit	16,522,050	10,560,450	6,365,250
OCIP Benefit As % of CV	0.72%	0.46%	0.28%

As shown from the model above, CHSRA's prospective OCIP program offers a potential benefit at all loss projections that could be achieved through the exercise of appropriate risk management. Although the table shows a potential benefit of \$16,522,050 at 50% of maximum loss, this loss level is never guaranteed. To achieve higher savings under this program, CHSRA's selected OCIP insurance broker would have to secure rates at or better than what is indicated in this pro forma. Losses above the maximum amount of \$22,080,000 are capped and transferred to the OCIP insurer. Given the assumptions in the table, CHSRA is not at risk of losing money under an OCIP program even though historically, "loss sensitive" OCIPs have had better than average loss results.

The assumptions used in this analysis are as follows.

- "Contractor combined rate" is the estimated combined general liability and workers' compensation rate, per \$100 of payroll, for what contractors would pay under a traditional approach. This rate is based on our knowledge of what contractor market rates are for the cost of workers' compensation and general liability insurance today, projected out for the next five years. The estimated combined rate also includes a factor for profit and overhead. The rate reflects a blend of our best estimate of average

contractor workers' compensation and general liability costs available today, while also accounting for an anticipated cost in workers' compensation rates over the next five years.

- "OCIP combined max rate" reflects our best estimate of the combined rate for general liability and workers' compensation an owner could secure in today's OCIP market given the estimated construction value, scope of work, and informal discussions with underwriters.
- "Loss conversion factor" is the charge for claims handling by an OCIP underwriter, expressed as a percentage of every dollar of incurred loss.
- "OCIP fixed cost" is the amount the insurer receives for its overhead, risk transfer premiums (such as to reinsurers), premium for individual occurrence stop loss (each occurrence is limited to a maximum), and profit. For this pro forma we used a fixed-cost rate of \$3.60, which is a conservative rate given the high volume of construction value in this program.
- "Construction cost" is the estimated hard cost construction value for CP-2 – CP-4 construction program, based on the most recent budget estimates provided by the CHSRA and its consultants.
- "Payroll" is the estimated unburdened payroll for CP- 2 – CP-4, usually expressed as a percent of hard cost construction value. Light commercial and residential construction usually has a higher payroll component, while equipment-intensive civil construction, such as this program, has a lower component. Our estimate of 15% of hard cost construction value is conservative. Financial benefits from consolidation would only improve in the above-referenced pro forma if unburdened payroll increases throughout the project.
- "Tax rate" is the rate for workers' compensation surcharges and fees and are assumed to be embedded in the overall program maximum rate outlined in the "OCIP combined max rate."

The following is additional detail regarding information provided in Exhibit V-1 above.

- "Contractor insurance credit" is the combined rate for all contractors' general liability and workers' compensation insurance multiplied by payroll and discounted by 10% (assuming contractors will not give 100% credit). For purposes of this illustration, we assumed the prime contractors and many first-tier subcontractors might have loss-sensitive programs with lower insurance rates while lower-tier contractors, including DBEs, have higher insurance rates. The rate derived for "Contractor insurance credit" is a blended rate to account for varying rates amongst contractors working on the project.

- “Estimated total OCIP cost” at “Maximum Loss” is the worst-case scenario, wherein the losses hit the maximum stop loss point. This level is determined by applying the worker’s compensation/general liability maximum rate to the estimated payroll. Our pro formas include an “aggregate maximum stop loss” feature or a device with a similar name. This is a policy provision, the cost of which is included in the “fixed cost” portion of the premium. It is not an extra cost beyond what is shown in the pro formas. This feature assures the owner that unusually bad losses will not result in an OCIP costing the owner substantially more than if there were no OCIP.
- “OCIP Fixed cost” is the percent of “worker’s compensation/general liability maximum” that is attributed to fixed costs within the program. It is generally agreed the fixed cost of an OCIP is approximately 25% to 40% of the maximum premium. We assume fixed costs on the lower end of this range as fixed costs decline with higher assumed payroll levels.
- “Converted losses” are actual losses incurred increased by an assumed claim handling charge (Loss Conversation Factor (LCF)) of 8%. We used an 8% LCF in our assumptions as OCIP insurers have been offering LCFs between 7% - 9% in recent procurements. However, some insurers charge a per-claim fee instead of an LCF.
- “Administration costs” were assumed to be .00154 per \$1 of construction value based on recent data from OCIP broker procurements. The broker administration fee includes the cost to procure and bind an OCIP program, along with administering the OCIP over a five-year program. This fee was also conservatively estimated, as broker rates to procure and administer OCIP programs have become more competitive in the past two years. We also anticipate there will be much competition on this OCIP which may drive down broker administration rates. This rate also includes project risk management services from a contracted source.

Although our research indicates CHSRA could mostly likely secure an OCIP combined maximum rate of \$10.00 or better, additional pro formas are provided below with financial results assuming owner provided rates of \$11.00 and \$12.00, respectively.

Exhibit V-2
Cost Comparison - Traditional vs. OCIP @ \$14.30 Contractor and \$11.00 Owner Rate

Assumptions:

Construction cost:	2,300,000,000	OCIP combined max rate:	11.00
Estimated payroll:	345,000,000	Tax rate:	Included in fixed
Contractor combined rate:	14.30	Loss conversion factor:	1.08
OCIP fixed cost rate:	3.60	Administration rate:	0.00154
WC/GL maximum loss rate:	7.40		

OCIP Cost Comparison:

Loss Assumptions	50% Better than Maximum Loss	25% Better than Maximum Loss	Maximum Loss
Traditional			
Contractor Insurance Credit	44,401,500	44,401,500	44,401,500
OCIP			
OCIP Fixed Cost	12,420,000	12,420,000	12,420,000
Converted Losses	13,786,200	20,679,300	25,530,000
Administration	3,536,250	3,536,250	3,536,250
Estimated Total OCIP Cost	29,742,450	36,635,550	41,486,250
OCIP Benefit	14,659,050	7,765,950	2,915,250
OCIP Benefit As % of CV	0.64%	0.34%	0.13%

As the table indicates, assuming an OCIP combined maximum rate of \$11.00 per \$100 of payroll, the potential benefit under a 50% of maximum loss scenario still generates a benefit of \$14,659,050 over what contractors might pay for general liability and workers' compensation. This benefit, however, reduces by \$1,863,000 when a rate of \$11.00 is secured as opposed to a rate of \$10.00. Given the assumptions in table, CHSRA is not at risk of losing money under this rate scenario.

Exhibit V-3 assumes an OCIP combined maximum rate of \$12.00. As this table indicates, assuming an OCIP combined maximum rate of \$12.00 per \$100 of payroll, the potential benefit under a 50% of maximum loss scenario still generates a benefit of \$12,789,050 over what contractors would pay. The benefit, however, is diminished by another \$1,863,000 at a combined rate of \$12.00 versus an \$11.00 rate. The difference in benefit at a 50% of maximum loss scenario between an OCIP combined rate of \$10.00 and \$12.00 is \$3,726,000. Note that in Exhibit V-3 the OCIP benefit is slightly negative at maximum loss.

Exhibit V-3
Cost Comparison -Traditional vs. OCIP @ \$14.30 Contractor and \$12.00 Owner Rate

Assumptions:

Construction cost:	2,300,000,000	OCIP combined max rate:	12.00
Estimated payroll:	345,000,000	Tax rate:	Included in fixed
Contractor combined rate:	14.30	Loss conversion factor:	1.08
OCIP fixed cost rate:	3.60	Administration rate:	0.00154
WC/GL maximum loss rate:	8.40		

OCIP Cost Comparison:

Loss Assumptions	50% Better than Maximum Loss	25% Better than Maximum Loss	Maximum Loss
Traditional			
Contractor Insurance Credit	44,401,500	44,401,500	44,401,500
OCIP			
OCIP Fixed Cost	12,420,000	12,420,000	12,420,000
Converted Losses	15,649,200	23,473,800	28,980,000
Administration	3,536,250	3,536,250	3,536,250
Estimated Total OCIP Cost	31,605,450	39,430,050	44,936,250
OCIP Benefit	12,796,050	4,971,450	-534,750
OCIP Benefit As % of CV	0.56%	0.22%	-0.02%

These exhibits do not include the cost of excess liability insurance the OCIP sponsor usually arranges. One reason we have not included this item is that it is not possible to effectively compare excess liability costs between an OCIP and a non-OCIP. Another reason is contractors can attempt to cover an owner's requirement under their corporate program. Contractors have different limits of liability on their corporate program and it is difficult to make a comparison. If in a traditionally insured project the owner requires liability limits dedicated to the project, the contractor will arrange for such coverage separately and include the cost in the contractor's bid. If the owner is sponsoring an OCIP, the contractor does not procure such coverage.

Therefore, there is nothing to deduct from the contractor's bid for excess insurance. As a result, including the cost of excess insurance in the pro forma distorts the cost comparison against the OCIP.

Terms and conditions of an actual OCIP may vary substantially from the pro forma above due to insurance market conditions. Thus, factors used in the pro forma analysis could vary substantially from the assumptions shown here. Nevertheless, we believe the assumptions in these pro forma are realistic and likely in the current market.

Because of bidding laws many public agencies allow contractors to “bid net” of insurance. Often an aggressive program of education occurs during the bid process. The purpose of the education program is to convince contractors it is in their best interest to remove their insurance costs to be competitive and to show them how to do it. Studies have shown insurance is a major part of a contractor’s cost of doing business. Some authorities claim insurance is the largest single overhead cost to a contractor next to payroll. To be competitive, an astute contractor would recognize the value of removing the insurance cost.

B. General Liability-Only Program

One variant of a consolidated insurance program is general liability-only. The exhibit below compares the cost of owner-provided versus contractor-provided general liability insurance.

Exhibit V-4
General Liability Only Cost Comparison

Assumptions:

Construction cost:	\$	2,300,000,000
Premium rate per \$1000 CV:	\$	1.436
Per occurrence deductible:	\$	250,000
Maximum deductible cost:	\$	5,000,000
Tax & fee rate:		Included
Administration rate:	\$	0.00031

GL Only Cost Comparison:

Loss Assumptions	50% Better than Maximum Loss	25% Better than Maximum Loss	Maximum Loss
Contractor Provided			
Premium Billed to Owner at Maximum Cost	9,023,098	9,023,098	9,023,098
Add Profit & Overhead	1,353,465	1,353,465	1,353,465
Total Cost Billed to Owner	10,376,563	10,376,563	10,376,563
Owner Provided			
GL Only Premium	3,303,098	3,303,098	3,303,098
Deductible Losses	2,500,000	3,750,000	5,000,000
Administration	720,000	720,000	720,000
Estimated Total GL Only Cost	6,523,098	7,773,098	9,023,098
Owner Provided GL Only Estimated Benefit	3,853,465	2,603,465	1,353,465
Benefit As % of CV	0.17%	0.11%	0.06%

For project-specific general liability insurance, a general contractor can buy general liability coverage at essentially the same rate as a project owner. The general liability program assumed above would be loss sensitive subject to a \$250,000 per-occurrence deductible. The policy would be subject to a maximum deductible cap of \$5,000,000. Due to the loss sensitive nature

of the policy, the general contractor would most likely charge the project owner the maximum anticipated cost, including a charge for profit and overhead. Savings resulting from good loss experience would accrue to the contractor.

As shown in the exhibit, if losses are favorable at 50% of maximum loss, or \$2,500,000, the benefit to the sponsor would be approximately \$3,853,465. The benefit is derived from good loss experience. At maximum loss at \$5,000,000 the benefit of \$1,353,465 would be the result of not paying the profit and overhead load by the general contractor, estimated in this exhibit at 15%.

The assumptions used in this analysis are as follows.

- “Construction cost” is the estimated hard cost construction value for CP-2 – CP-4 construction program, based on the most recent budget estimates provided by the CHSRA and its consultants.
- “General Liability-Only rate (GL Only)” is the rate that is applied to the estimated construction cost to arrive at the GL Only OCIP premium. For this pro forma we used the average of the rate indications we obtained, by informal inquiry, to place a GL Only program in today’s market.
- “Per occurrence deductible” is the amount of deductible anticipated to apply for the GL only program. The deductible would apply on a per-occurrence basis.
- “Maximum deductible cost” is the worst-case scenario, where the losses hit the maximum stop loss point.
- “Tax and fee rate” includes anticipated premium taxes and fees and is included in the GL Only rate.
- “Administration rate” was assumed to be .31304 per \$1,000 of construction value (.00031304 X CV) based on recent data from OCIP broker procurements. The broker administration fee includes the cost to procure and bind the GL Only OCIP program along with administering the program for a five-year term. This fee was also conservatively estimated, as broker rates to procure and administer all OCIP program types have become more competitive in the past two years. We also anticipate there will be much competition on this program which may drive down broker administration rates.

C. Cost variability

Another factor that could affect the analysis is the actual cost of contractor insurance. Under the OCIP program we have assumed an average contractor rate of \$14.30 per \$100 of unburdened payroll. We believe this to be a reasonable and conservative average rate for the

type of work predicated in CHSRA's construction program based on discussions with leading OCIP brokers in California. The actual cost could be higher or lower depending on a number of factors including contractor size, experience modifiers, level of assumed risk (deductibles or self-insurance), and other factors.

The ultimate unknown variable is contractor credits. While we believe our blended contractor rate estimates are accurate for a mix of contractors and subcontractors in heavy civil construction, particularly road and rail, that accuracy in rate estimates does not equate to accuracy in estimating credits.

Contractors and subcontractors may not credit 100% of their insurance costs to an owner in an OCIP. There can be several reasons for that, including fixed premiums, minimum premiums, and lack of experience in estimating insurance costs. Some analysts make an allowance for contractor credits being less than contractor actual costs. We have used a 10% holdback by contractors in crediting their insurance costs, but that may not be enough.

Another variable factor is the general contractor's option to do a CCIP. In a large single site, single general contractor project, a CCIP can be very competitive with an OCIP. When a project is broken into smaller components and multiple general contractors may be involved, the consolidation benefits of a "CIP" are lost to some extent when multiple CCIPs are employed. To some extent, multiple CCIPs on a project are a little different from traditional insurance models. Furthermore, there is an increased possibility of cross litigation between contractors and disputes among insurers regarding liability.

The contractor chosen for CP-1 has arranged a CCIP for the project. While we have not yet seen the cost of this program, it may be competitive with rates obtainable by an owner under a CCIP. If so, the estimated financial benefit to CHSRA under the various OCIP scenarios could be considerably reduced.

VI. Findings, Conclusions, and Recommendations

A. Decision Factors/Findings

There are a number of factors to be addressed in making a decision among the risk-financing alternatives for High-Speed Rail. Some of these are unique to this unique project.

1. Indemnity Obligations

The freight railroads, whose right of way is critical to the projects, are demanding broad indemnification and high levels of insurance from the CHSRA. Without control of the liability insurance, CHSRA is at risk of large unfunded costs in that it will be obligated to defend and indemnify the railroads for losses that may not be insured under a traditional insurance program. CHSRA must rely on insurance provided by a third party, a contractor. That insurance may not respond for a variety of reasons, some of which are discussed below.

As discussed previously, changes to the construction anti-indemnity statute (California Civil Code Section 2782 et seq.) enacted January 1, 2013, significantly restrict the level of indemnification an owner can require of a contractor or that a general contractor can require of a subcontractor. The net effect of the changes is to compel only a “limited form” indemnity agreement in construction contracts.

Any “active negligence” on the part of an owner, general contractor, or construction manager eliminates any benefit of the insurance and indemnity requirements (CC 2782.50(a)) imposed on a subcontractor. Thus, if the indemnity obligation flows “downstream” (e.g. from indemnified party to owner, from owner to general contractor, from general contractor to subcontractor) recovery from a loss as an indemnitee becomes progressively more tenuous with each step. The party whose indemnification is being relied on cannot be compelled to indemnify for the active negligence of any indemnitee, unless in this example, it is the owner indemnifying another party not part of a “construction” contract.

Agreements with the freight railroads are not subject to these restrictions and are likely to contain broad indemnification requirements. First, the agreements with the railroads are not all “construction” contracts and therefore not subject to the construction anti-indemnity statute. They arise primarily because of proximity to the railroad’s right of way. Second, the railroads have a statutory exemption (Government Code Section 14662.5). Thus, it is inevitable the CHSRA will be providing some indemnity to the freight railroads that it cannot pass along to its contractors or subcontractors.

Apart from the indemnity restrictions, there is also the matter of restrictive insurance forms. The Insurance Services Office (ISO), the organization that develops and issues standard insurance forms, has issued new additional insured endorsement forms containing major changes effective April 2013. All of the forms are more restrictive than their predecessors.

To some extent these changes are intended to match recent changes to state anti-indemnity statutes in California and elsewhere. However, the changes also are part of an increasing trend to limit coverage for additional insureds. Thus, the option of obtaining insurance relief for indemnity obligations also has been foreclosed to a significant extent. The result is an increasing probability that a loss involving an additional insured will not be covered by insurance.

The best way to increase certainty of coverage and reduce the CHSRA's risk of uninsured loss is to control the liability insurance program.

2. Potential for Schedule Delay

As mentioned earlier in this report, schedule delays play havoc with consolidated risk-financing programs. One cannot simply cancel the policies and plan on re-procuring coverage when the delay is past. Minimum premiums and short-rate penalties make that course of action economically unfeasible. In addition, some form of protection is needed for most lines of coverage, even if there is little activity underway.

Furthermore, under an OCIP the sponsor is contractually obligated to provide insurance to eligible contractors. Failure to maintain that insurance could be a breach of every contract with a contractor or subcontractor in the program.

Delay can also result in an inadequate period of coverage, as OCIPs and CCIPs are underwritten for a maximum time period, usually no more than five years.

If construction is halted and a structure is partially complete, the program sponsor may be compelled to maintain builder's risk coverage until the delay passes. Builder's risk insurance is generally expensive and cost is a function of both value and duration. Therefore, if construction is halted, premiums continue but little value is received and the delay may result in problems extending the coverage through completion of the structure.

The potential for schedule delay is a significant exposure for CHSRA. While the CHSRA has weathered numerous attempts to delay or "derail" the project, the attacks continue. Given the huge economic, geographical, and environmental impact of the program, delays are always possible.

3. Potential for Long-Tail Claims

As noted in the chapter on hazard analysis, "Valley Fever" is a risk associated with construction work in the California Central Valley. According to the Center for Disease Control:

In very severe cases of coccidioidomycosis, the nervous system can be affected and there may be long-term damage. Sometimes people with weakened immune

systems or other risk factors may develop chronic pneumonia or other severe symptoms. These long-term complications are rare.⁶

Other sources, including a Valley Fever survivor's organization, raise troubling questions about long-term effects of the disease. Yet other sources argue that there is little scientific information about the long-term effects of Valley Fever.

At the least, there is the possibility of long-term claims arising from the coccidioidomycosis condition. In a consolidated insurance program that includes workers' compensation, the program sponsor may remain responsible for claims and losses indefinitely. While the stop loss feature of such a program limits the financial risk, open claims may prevent closing out the policy years and recovering the unused portion of a loss fund.

Bickmore has a public entity client with open policy accounting periods from an OCIP for which the project was completed fourteen years ago. The issue holding the program open is the potential for asbestosis claims. The carrier has refused to settle and close out the OCIP. The carrier's position complicates accounting for the public entity and precludes recovery of some of the unspent loss fund.

The potential exposure to long-tail claims from occupational disease is a factor weighing against a consolidated program that includes workers' compensation. While a direct employer has an ongoing interest in maintaining workers' compensation coverage along with an employment relationship to the injured worker, a CIP sponsor who is not the direct employer has no such interest. An ongoing liability after a project is complete is not something a sponsor wants to carry forward.

4. Unique Employee Injury Exposures

The employment of labor in the Central Valley brings some unique challenges. The remote locations in sparsely populated areas of the state away from major urban centers result in a shortage of available workers.

Workers will have to be brought in to the area from outside. This means either long commutes may be involved, or workers will have to be housed in the vicinity of the project, as is the case for farm workers and those who have worked on other public works in the area.

For the former situation, long commutes, this means significant exposure to vehicular accidents that could be considered within course and scope of employment, making them possible occupational injuries. For the latter situation, workers housed in the area, this means a potential for so called "24-hour" coverage for workers' compensation.

⁶ CDC Website @ <http://www.cdc.gov/fungal/coccidioidomycosis/treatment.html>

Either situation described above greatly increases the exposure to workers' compensation losses and could severely impact the financial results of an OCIP.

5. Mixed Funding and Project Delivery

Funding for the High-Speed Rail Project comes from various different sources, including federal sources, bond revenues, cooperative agreements with other transit agencies, and eventually, private investment. Funding partners often have requirements regarding security and risk. Some may favor and others may oppose an OCIP.

Different project delivery methods can also affect the choice of risk financing. Design-build contracts with large, well-financed design-build teams may be in a better position to manage risk than a public entity owner, provided that a project is not broken into multiple contracts with different design-build teams. When multiple primes are involved, coordination of insurance is sacrificed and cross litigation potential rises. Economies of scale may also be lost.

Construction Manager (CM) at-Risk is another delivery method that generally favors allocating risk financing control to the contractor, who in this model is also the CM. Since the CM is responsible for meeting budget goals and is at risk of overruns, including those caused by losses, there is merit to the argument that the CM should control the insurance. Again, if a project is broken down into multiple components with different contractors (CMs at-Risk) insurance control may be better left with the owner.

California's High-Speed Rail Program will be constructed under a variety of financing and delivery methods. The major construction packages (CP 1-5) will be mostly done under design-build contracts, although CP-5 may be under a Public Private Partnership ("P3," see next section). Some of the construction will be completed by other agencies, including local jurisdictions (e.g., grade crossings) and other transit systems.

The variety of funding and project delivery mechanisms and sources would complicate management of an OCIP and make it difficult to determine proper allocation of risks under multiple scenarios. CP-1 has already been procured under a traditional arrangement. The design-build team involved in that project chose to establish a contractor controlled insurance program. Coordinating an OCIP with that program with coverage programs from other entities involved in the project, and with P3 on future projects, make management of risk financing a challenge.

6. Uncertainty of Public Private Partnership (P3) Usage

P3 involves significant transfer of risk from a public entity to a private concern. With that risk goes responsibility and control. P3 concessionaires structure risk-financing programs for the duration of the agreement. That means construction risk and operations and maintenance risk (O&M) risk are closely coordinated and most often procured from the same source. The intent

is a seamless transition from construction risk-financing to O&M risk-financing with no gaps or overlaps in coverage.

Generally, OCIP and P3 are not completely compatible. For the project owner to attempt to transfer most of the project risk to the concessionaire and then retain control of the risk financing is not a model that is in the spirit of the concept. It can also cause problems in execution.

We understand that CHSRA is contemplating use of P3 for CP-5 and future rail infrastructure construct after the underlying civil infrastructure is in place. There is some possibility, we learned from CHSRA consultants, that CP 1-4 could be “subsumed into a P3 structure.” Under such a scenario, CHSRA would assign its contracts to the concessionaire. We were also told the CHSRA desires to “maximize private sector financing as soon as possible.” Given these factors, tying portions of the overall project to an OCIP does not appear to be a good strategy.

There can be situations in which an OCIP and P3 can work together, but such a structure requires some modification of the standard program design and contract language for a P3. Given that multiple P3 arrangements may be in effect at some future point in the development of California High-Speed Rail, the existence of an OCIP would be a complicating factor in negotiations and ultimately, in some loss scenarios.

Emerging Business and Disadvantaged Group Goals

As noted in the chapter on hazard analysis, the Community Benefit Agreement is designed to extend employment opportunities to certain classes of individuals. As noted in that section, employing individuals with little or no experience in the construction industry brings challenges. The solution is training and enforcement of a strict safety program.

Given the remote location and the other workers’ compensation related risk issues discussed above, placing the responsibility for worker training and management of losses, including risk financing, with the contractor would likely be a more effective approach than any consolidated approach by the owner.

B. Conclusions

We conclude that a CHSRA-controlled insurance program including multiple lines of insurance coverage is not a preferred solution for High-Speed Rail. However, the multiple indemnity obligations incurred by CHSRA and the unreliability of contractual risk transfer coupled with the continuously decreasing protection afforded to additional insureds under liability policies, mandates something more than traditional attempts at contractual risk transfer.

We believe a “consolidated liability insurance program” (CLIP) would provide better protection for CHSRA and would also address a number of significant risks inherent in “traditional” insurance. A liability only program better resolves the issues regarding indemnification and

insured status with the freight railroads and other indemnitees, and avoids the entanglement of long-term liabilities that can accrue with an owner-sponsored program including workers' compensation and other lines of coverage. Such a program also reduces the administrative burden for the owner that comes with an OCIP and reduces cost uncertainties associated with many of the factors discussed in the prior section.

Given the indemnity obligations to the freight railroads and other parties CHSRA must indemnify, the prospect of multiple design-build contractors on CP 1-4 and the probability of different insurance programs for each, we believe this is the most practical and efficient way to meet those obligations and assure that CHSRA does not face a large unfunded liability loss. This approach can also help secure higher limits of coverage to protect against catastrophic loss.

Some of the factors leading to this overall conclusion are listed below.

- A properly constructed consolidated liability insurance program can allow the owner to waive or substantially reduce insurance requirements for emerging business, thereby eliminating a major obstacle to participation as a subcontractor or prime contractor.
- A consolidated liability insurance program gives CHSRA control of the most critical insurance coverage (general liability) that is not possible merely through contract terms (traditional).
- Given the construction value of CP 2-4, economies of scale strongly point toward cost savings at reduced risk compared to an OCIP through a consolidated liability insurance program which combines volume discounts and the potential to recover unused premium if losses are kept to a reasonable level.
- If a general contractor elects to use its corporate insurance program rather than a project-specific program, completed operations coverage may be dependent on continued maintenance of general and umbrella liability insurance by the general contractor. The CHSRA will have no control over this exposure, except to require coverage in the contract, and its only enforcement mechanism after the project is complete will be a breach of contract action. Requiring the coverage and actually getting it are not the same, especially if the contractor sells the company or goes out of business. A consolidated liability insurance program covers this long tail risk.
- If insurance is provided traditionally, multiple contractor teams on the various CP 2-4 project increase the potential for disputes between liability insurers as to responsibility for losses that involve projects that overlap in any way.
- A consolidated liability coverage program may include benefits unavailable to contractors. Generally CIPs are non-cancellable, except for very limited circumstances. They provide dedicated high limits. Coverage is usually broader than most contractors can obtain.

C. Recommended Program Design

1. Coverage

A properly structured liability-only program for CP 2-4 should contain the following elements.

General Liability Insurance. Commercial general liability insurance protects all eligible project participants from tort claims for bodily injury, property damage liability, personal injury, and advertising injury. All “enrolled” parties (owner, general contractor, subcontractor, construction manager) are named insureds. Under an OCIP, CHSRA can control the protection offered to additional insureds or may arrange inclusion of indemnitees as named insureds which eliminates the defects found in additional insured endorsements. Control of general liability insurance affords CHSRA a much-improved ability to fund its indemnity obligations to the railroads.

Limits of coverage should be \$2 million per occurrence, \$4 million general aggregate, and \$4 million products and completed operations aggregate. General liability insurance may also be arranged to provide excess auto liability to the owner for non-owned autos.

This program likely would be written as a “large deductible” program but this will not be determined until CHSRA approaches insurance markets. General liability-only owner-sponsored programs are rare. The only instances of which we are aware are in so-called “monopolistic” states in which a state-run pool provides workers’ compensation insurance. Thus, there is limited experience with such design, particularly in California.

One significant issue will be how much of the retained loss (deductible or self-insured retention) can be passed through to contractors.

Excess liability insurance. Excess liability insurance provides higher limits of coverage over the primary general liability and the employer’s liability portion of the workers’ compensation policy. All enrolled contractors are named insureds.

Because of indemnity obligations with the freight railroads and because of the passenger liability limitations of Public Law 105-134 (the “Amtrak Act”), CHSRA should consider total liability limits (primary and excess) of no less than \$200 million per occurrence and aggregate (policy limit). We recommend requesting quotations for higher limits of \$300 million, \$400 million, and possibly \$500 million.

2. Insurance to be Provided by Contractors

The remaining coverage typical of construction projects should be provided by the design-build contractors and possibly their subcontractors. These include the following.

- **Auto liability** – “Insurance follows the vehicle.” This insurance is never consolidated.

- **Workers' compensation** – Given the discussion on long-tail claims and unique exposures for this project, consolidating workers' compensation in an OCIP appears to offer little benefit.
- **Professional liability** – The design-build delivery system moves some of the design risk from the owner to the DBT. Given the size and financial strength of the teams proposing on CP-1 and likely to propose on the remaining projects, additional insurance purchased by the owner should be unnecessary. Furthermore, professional liability insurance often works more to the benefit of the designer than to the benefit of the client, the most likely party to file a claim. Nevertheless, this particular coverage should be discussed within CHSRA with its advisors to determine if a layer of excess protection might be desirable. Such discussion is beyond the scope of this report and involves complex subjects.
- **Pollution liability** – None of the information we reviewed indicated significant risks that would justify the purchase by the owner of pollution liability excess of that carried by most large contractors. Requirements by the freight railroads for environmental liability insurance are another matter, however. Since the type of coverage the freight railroads are asking for are in addition to pollution liability covering construction-caused pollution incidents, those demands will be addressed separately and are not part of this report.
- **Builder's risk** – While there are often compelling reasons for owner-arranged builder's risk and most of the standard construction contract forms, including the AIA 201, provide for owner-purchased coverage, the complexity of this project justifies contractor-arranged builder's risk insurance. The complexity includes multiple delivery systems, dispersed locations, the future appearance of P3 arrangements, and funding issues. Builder's risk insurance is one of the most burdensome for administration and the load administering such a program is better shouldered by the design-build contractors than by CHSRA.

3. Program Resources

i. Staffing

Unlike a multi-line OCIP, a GL-only program should not require additional staffing resources beyond CHSRA's existing risk management staffing needs. Compared to workers' compensation, general liability insurance involves far fewer claims and less follow up and maintenance on the part of the sponsor.

Any necessary technical resources can be contracted on an as-needed or retainer basis.

ii. Administration

Consolidated workers' compensation programs require:

- Issuance of a separate insurance policy to each enrolled contractor;
- Obtaining evidence of insurance from contractors and subcontractors for "off-site exposures;
- Tracking and reporting payroll to insurers; and
- Reporting loss experience to rating bureaus (unit statistical reports).

GL-only programs involve issuance of a single primary policy and excess policies with a certificate of insurance provided to each enrolled contractor. The administrative burden is significantly lessened in a GL-only program.

Underwriters of GL-only programs in the private sector, which are used mostly for residential construction, usually require an administrator to process forms and provide other materials. We do not know to what extent the markets will require a third-party administrator for a GL-only program for CHSRA. However, we have used the administrative fee rates typical for a private sector program and note that the administration costs are significantly lower than what we are used to seeing for a full public works OCIP. Those rates are indicative of the significantly lowered workload in a GL-only program.

iii. Insurance Brokerage

CHSRA would need an insurance broker to transact an insurance placement for the program and continue to service the account. An insurance broker may be able to provide administration services as well.

Selection of an insurance broker should be conducted through the procurement process. Because of the nature of a GL-only owner insurance placement, we believe that CHSRA would have access to a broader range of competent insurance brokers than would most public entities seeking coverage for a more traditional OCIP. This market range may include both "retail" and "wholesale" or excess and surplus lines brokers.

A GL-only placement should be more expeditious than putting a full-range OCIP in place. Nevertheless, with RFQs and RFPs being released in the next few months for CP-2&3 and CP-4, CHSRA should begin its insurance broker procurement as soon as possible if the risk-financing approach recommended in this report is adopted.

iv. Safety

Despite the lessened financial impact of losses by use of a GL-only consolidated program as opposed to a full OCIP, CHSRA has a direct interest in a safe project. A safe project is delivered with less “friction” and less chance of delay. Furthermore, losses related to other lines of coverage, including workers’ compensation, auto, environmental, and professional liability can also have effects on general liability programs. Safety also has direct implications on CHSRA’s relationship with the freight railroads, other public agencies, and funding sources.

Therefore, we recommend CHSRA pursue a safety program that mandates minimum standards. We understand the Program Management Team, under Parsons Brinckerhoff, is already providing guidance in this area.

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Appendix A

Glossary

Administration. Services provided to enable operation of a consolidated program. These include subcontractor enrollment certificate and policy distribution data management, information assistance document publication and distribution, etc.

Aggregate. The maximum amount payable by an insurer under an insurance policy during the policy term regardless of the number or dollar amount of claims.

CCIP (contractor controlled insurance program). Same as an owner controlled program except the general contractor purchases coverage.

Composite Rate. A premium rate that combines rates from different occupational codes and may combine lines of coverage i.e. workers' compensation and general liability.

Errors and Omissions Liability Insurance. Also called "professional liability insurance." Protects against claims alleging failure to perform to the customary level of care demanded of one's profession.

Excess Insurance. A policy or bond covering the insured against certain hazards and applying only to loss or damage in excess of a stated amount or specified primary or self-insurance. Also, that portion of the amount insured that exceeds the amount retained by an entity for its own account.

Fixed Premium. The portion of total maximum premium that represents the minimum premium cost to the sponsor if no losses occur and there is no change to the rate basis (usually payroll).

General Liability Insurance. Insurance protecting against claims for negligence arising out of bodily injury, property damage, personal injury, or advertising injury.

Indemnity Agreement. Also called "hold harmless agreement," although there is a technical difference. A contractual provision whereby one party ("indemnitor") agrees to pay for losses caused to another party ("indemnatee") because of some activity or happening arising out of the contract between the two.

Loss Conversion. A charge (usually between 7% and 12%) added to incurred claims to cover claim adjusting.

Loss Fund. The portion of insurance premium allocated to pay losses, as opposed to the portion of the premium allocated to pay for insurer expenses, profits, taxes, and reinsurance.

OCIP (Owner Controlled Insurance Program). An arrangement whereby the owner of a construction project buys basic insurance coverage (general liability, excess liability, and workers' compensation) for all project participants.

OPPI (Owner Protective Professional Indemnity). Excess professional liability insurance that protects the program sponsor only.

Project Professional Liability Insurance. A type of insurance coverage usually purchased by a project owner that covers all design errors and omissions claims for all design professionals on a project.

Sponsor. The party responsible for arranging the consolidated insurance program, usually an owner, general contractor, or developer. Sometimes this could be a construction manager.

Stop-loss. A form of reinsurance also known as "aggregate excess of loss reinsurance" under which a reinsurer is liable for all losses regardless of size that occur after a specified loss ratio or total dollar amount of losses has been reached.

"Traditional" Insurance. An unconsolidated approach to providing insurance coverage whereby each party arranges its own insurance protection and negotiates indemnification of other parties through means usually backed by the indemnitor's existing insurance.

Workers' Compensation Insurance. Insurance against losses arising out of an employer's statutory responsibility to provide medical and lost wage benefits to injured workers.

Wrap-up. A generic term for consolidated construction insurance programs (OCIP or CCIP).

Appendix B

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Appendix C

Persons Interviewed

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Bickmore interviewed the following persons:

Augustine Chung – Third Party Relocation Manager, Cordoba Corporation

John Cockle – PMT Risk Control, Parsons Brinckerhoff

Russel Fong – Chief Financial Officer, California High-Speed Rail Authority

Dane Hudson – Construction Manager, Parsons Brinckerhoff

Melissa, External Affairs, CA High-Speed Rail Authority

Rob, Public Relations, CA High-Speed Rail Authority

Terry Marcellus – Senior Commercial Specialist, Parsons Brinckerhoff

Mark McLoughlin – Deputy Director of Environmental Planning, CA High-Speed Rail Authority

Joseph Metzler – Assistant Vice President PB Transit and Rail, Parsons Brinckerhoff

Jeff Morales – CEO, California High-Speed Rail

Karen Greene Ross – Deputy Director of Legislation, CA High-Speed Rail Authority

Jon Tapping – Risk Manager, CA High-Speed Rail Authority

Frank Vacca – Chief Program Manager, CA High-Speed Rail Authority

Appendix D

Documents Reviewed

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Documents Reviewed

Draft California State Rail Plan 2013

Request for Qualifications for Design-Build Contracts for Construction Package 2-3

Preliminary Assessment of California's Cost Estimates and Other Challenges – GAO

California High-Speed Rail Program Revised 2012 Business Plan

High-Speed Rail Authority Follow-Up – California State Auditor

Insurance and Indemnity Agreement Between Union Pacific Railroad and the California High-Speed Rail Authority (Draft)

USCODE-2011-title49-subtitleV-partE-chap281-sec28103

Request for Proposal for Design-Build Services RFP No.: HSR 11-16

Draft Scoping Reports

- ✓ Merced to Fresno Section High-Speed Train Project EIR/EIS
- ✓ Fresno to Bakersfield Section High-Speed Train Project EIR/EIS
- ✓ Los Angeles to Palmdale Project EIR/EIS
- ✓ Bakersfield to Palmdale Scoping Report

Final Program Environmental Impact Report/Environmental Impact Statement

Economic Impact Analysis Report

California High-Speed Rail Authority Funding Plan

Program Risk Register, April 3, 2013

Fresno to Bakersfield, Design Package & Cut Line Diagram, 3/7/13